FOUNDED IN 1856

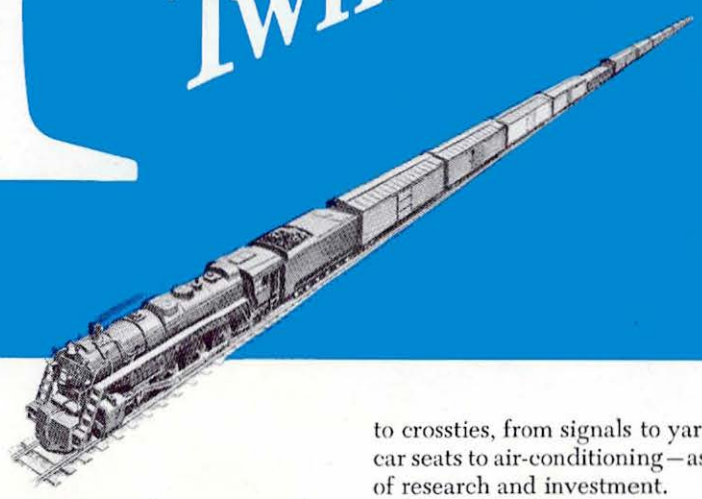
RAILWAY AGE

FREIGHT PROGRESS NUMBER

MAY 21, 1949

GENEVA COLLEGE

"Twins...twice removed!



Unless you happen to be an expert, the two rail sections shown above may look about like twins. But actually—as a result of continuous research in rail design and metallurgy—the modern rail shown at the left has 80 per cent more strength and supporting power than its "twin" of 25 years ago, and is less than one-fourth as likely to break.

That's typical of the kind of improvement which has been made in every part of the railroad—from locomotives to crossties, from signals to yards, from car seats to air-conditioning—as a result of research and investment.

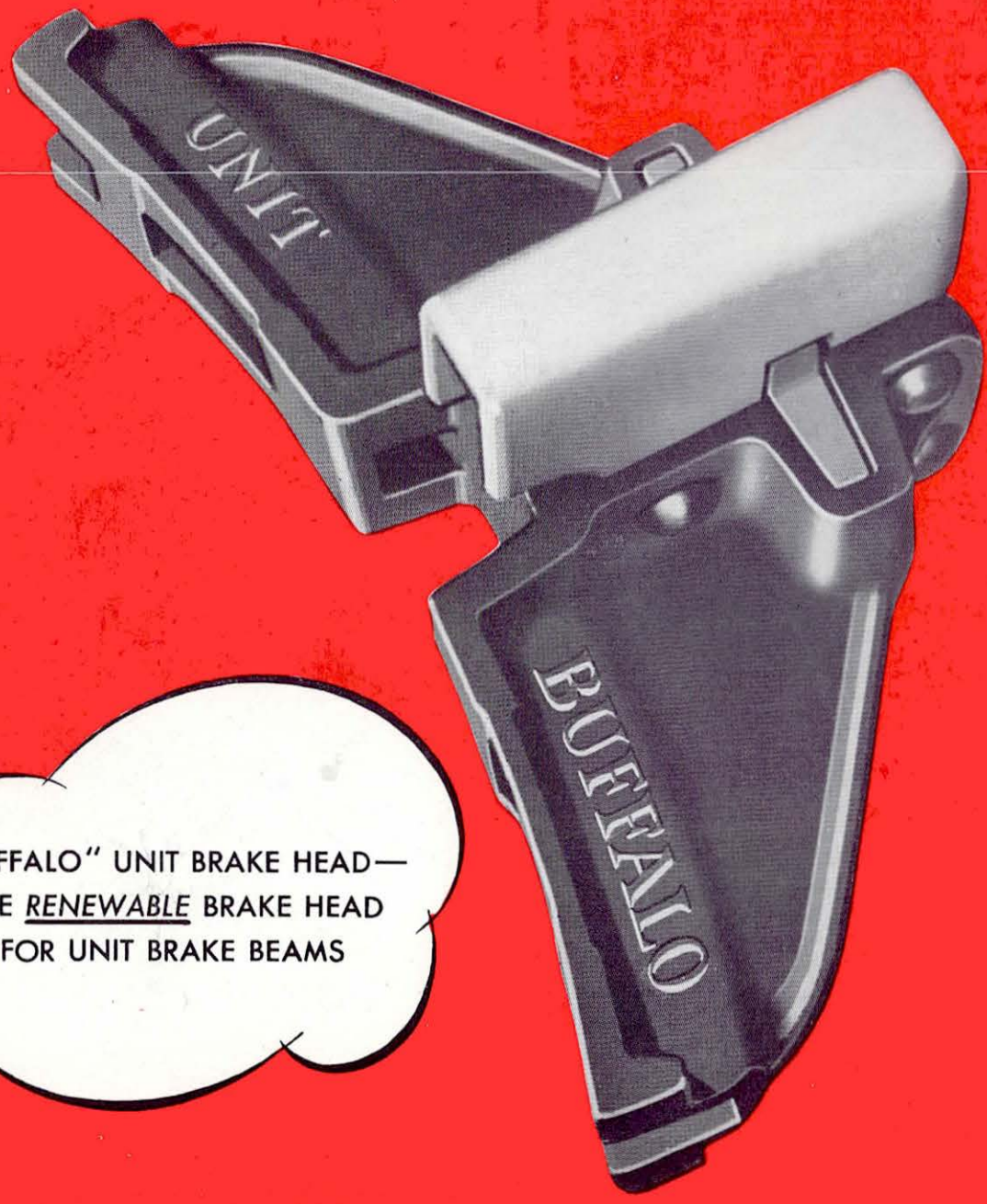
Altogether, the improvements made in American railroads in the years since the first World War represent an expenditure of more than 15 *billion* dollars—of which more than 2½ *billion* dollars have been spent just since the end of the *second* World War.

This is not government money lavished on railroads. It is railroad money—some of it borrowed, some of it taken out of earnings and plowed back into plant and equipment. In the past quarter of a century in fact, for every dollar paid out in dividends to the owners of the roads more than two dollars have been spent on improvements—for better service to you.

There is every reason to expect that railroad research will be as fruitful of benefit in the future as it has been in the past. But to provide the funds necessary to put these results to work so as to produce even better and more economical service in the future, it is necessary that railroads have a chance to earn a sound return on their continuing investment today.

ASSOCIATION OF AMERICAN RAILROADS

WASHINGTON 6, D. C.



"BUFFALO" UNIT BRAKE HEAD—
THE *RENEWABLE* BRAKE HEAD
FOR UNIT BRAKE BEAMS

"BUFFALO"

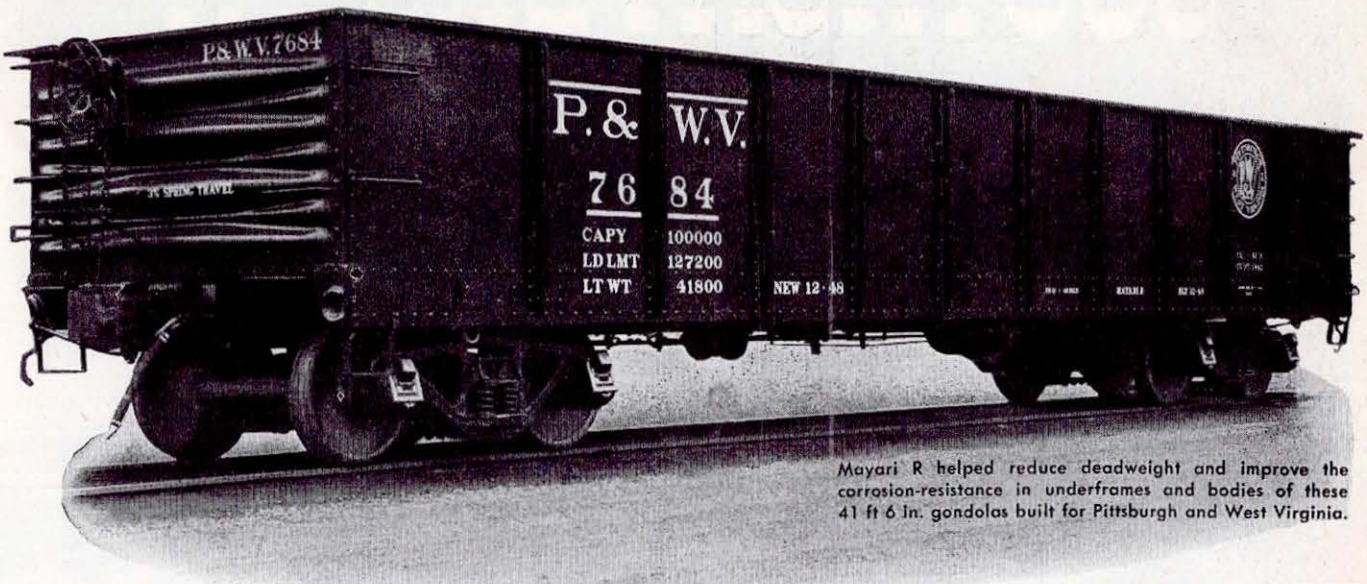
for half a century

A GREAT NAME IN BRAKE BEAMS

BUFFALO BRAKE BEAM COMPANY • NEW YORK

Lightweight Gondolas

FOR PITTSBURGH AND WEST VIRGINIA



Mayari R helped reduce deadweight and improve the corrosion-resistance in underframes and bodies of these 41 ft 6 in. gondolas built for Pittsburgh and West Virginia.

BUILT FROM CORROSION-RESISTING

Mayari R

Three-hundred of these low-alloy, high-tensile steel gondolas were built recently by Bethlehem for the Pittsburgh and West Virginia Railway Company. Constructed principally of Mayari R the cars have two outstanding features—their bodies and underframes weigh considerably less than those of similar cars built from carbon steel, and they have far greater resistance to atmospheric corrosion.

Mayari R is a versatile grade of steel with a well-balanced set of properties that make it ideal for use in this type of railway equipment. It has a high yield point, high endurance limit, and high tensile strength. It resists denting as well as carbon steel 1.30 times as thick; it has 5 to 6 times greater atmospheric corrosion-resistance; and it retains paint 20 to 80 pct longer. In addition Mayari R can be fabricated by conventional methods with only slight allowances needed for its higher mechanical properties.

Used in many thousands of cars built during the past decade, Mayari R has helped to improve service and reduce maintenance costs for the nation's leading roads.

Full information on Mayari R and its railway applications is readily available. Write or call our nearest sales office.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

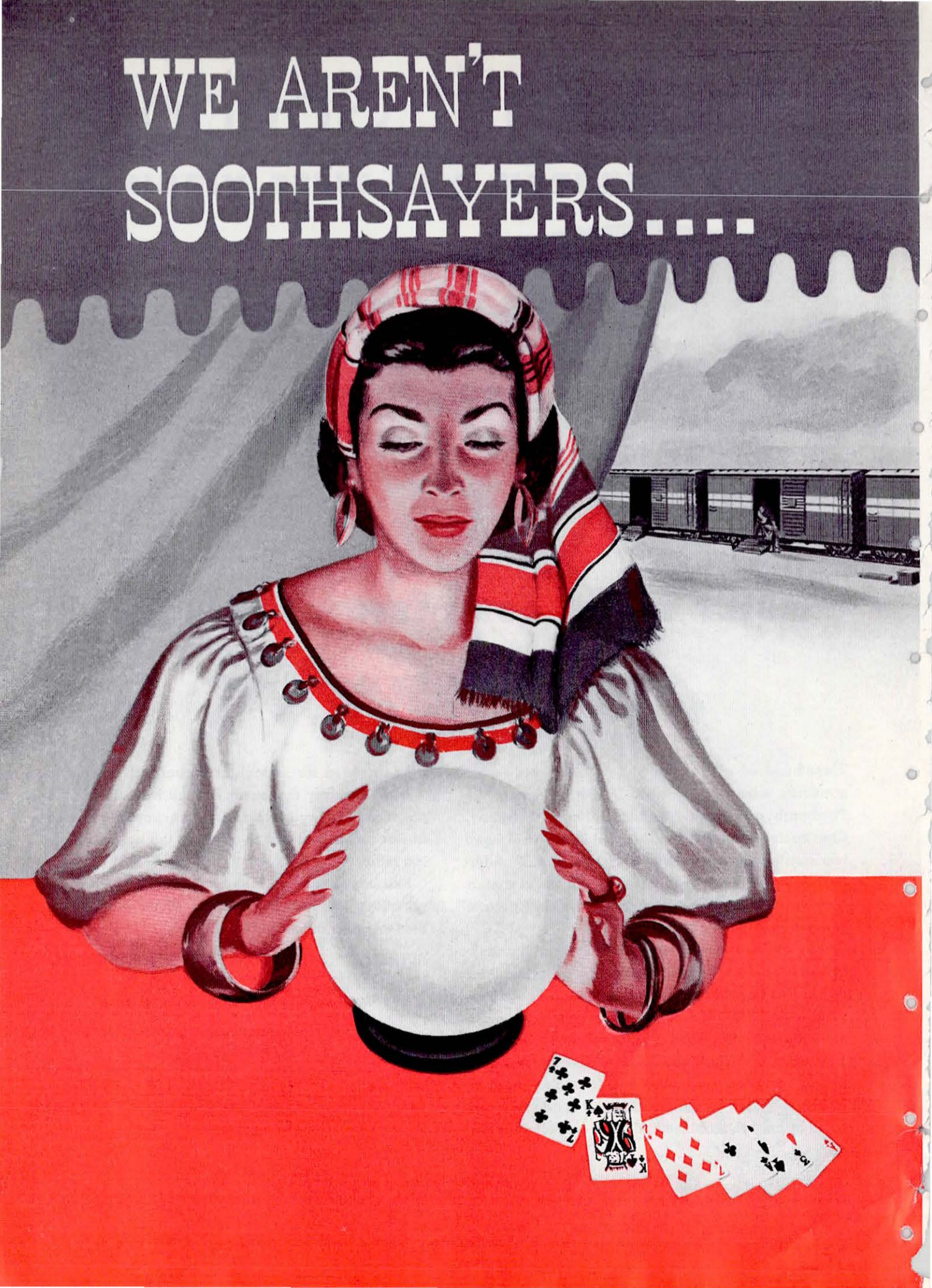
On the Pacific Coast Bethlehem products are sold by
Bethlehem Pacific Coast Steel Corporation
Export Distributor: Bethlehem Steel Export Corporation

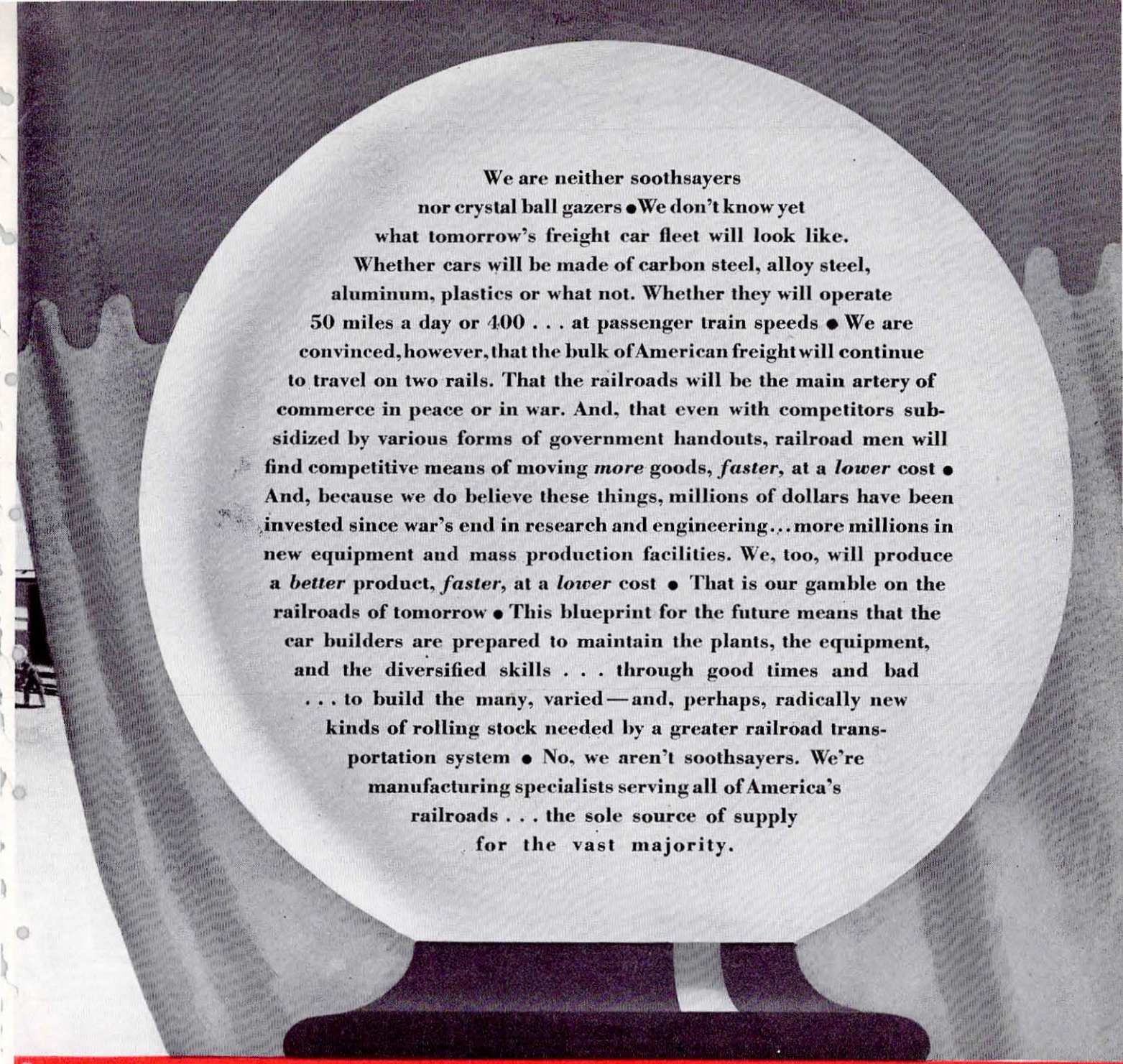
★ BETHLEHEM STEEL ★

Mayari R *makes it lighter...stronger...longer lasting*

Published weekly by Simmons-Boardman Publishing Corporation, Orange, Conn. Executive Offices, 30 Church Street, New York 7, N. Y. Entered as second class matter at Orange, Conn., under the act of March 3, 1879. Subscription price $6.00 for one year. U. S. and Canada. Single copies, 50 cents each. Vol. 126, No. 21.

WE AREN'T SOOTHSAYERS....





We are neither soothsayers nor crystal ball gazers • We don't know yet what tomorrow's freight car fleet will look like. Whether cars will be made of carbon steel, alloy steel, aluminum, plastics or what not. Whether they will operate 50 miles a day or 400 . . . at passenger train speeds • We are convinced, however, that the bulk of American freight will continue to travel on two rails. That the railroads will be the main artery of commerce in peace or in war. And, that even with competitors subsidized by various forms of government handouts, railroad men will find competitive means of moving *more* goods, *faster*, at a *lower* cost • And, because we do believe these things, millions of dollars have been invested since war's end in research and engineering... more millions in new equipment and mass production facilities. We, too, will produce a *better* product, *faster*, at a *lower* cost • That is our gamble on the railroads of tomorrow • This blueprint for the future means that the car builders are prepared to maintain the plants, the equipment, and the diversified skills . . . through good times and bad . . . to build the many, varied—and, perhaps, radically new kinds of rolling stock needed by a greater railroad transportation system • No, we aren't soothsayers. We're manufacturing specialists serving all of America's railroads . . . the sole source of supply for the vast majority.

AMERICAN RAILWAY CAR INSTITUTE

AMERICAN CAR AND FOUNDRY COMPANY
THE BUDD COMPANY*
GENERAL AMERICAN TRANSPORTATION COMPANY
GREENVILLE STEEL CAR COMPANY
MAGOR CAR CORPORATION
PRESSED STEEL CAR COMPANY, INC.
PULLMAN-STANDARD CAR MANUFACTURING COMPANY
THE RALSTON STEEL CAR COMPANY
ST. LOUIS CAR COMPANY
VIRGINIA BRIDGE COMPANY
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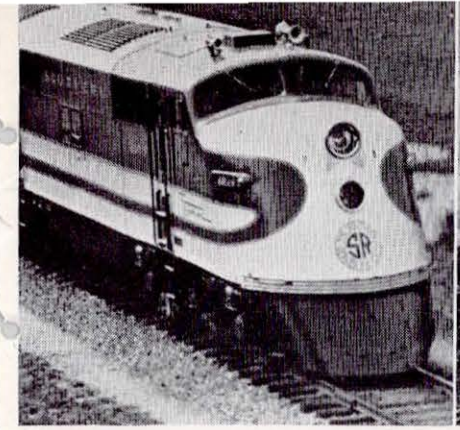
Serving The Industry That Serves America

*Passenger car builders only

30
KANSAS CITY SOUTH
73
Rock Island
101
ERIE
8
WESTERN PACIFIC
902



All sheathed with

MET-L-WOOD

METAL BONDED TO PLYWOOD

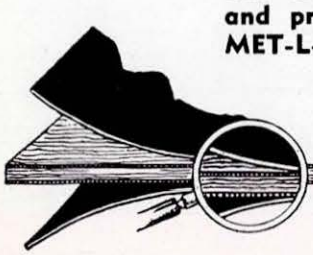
Carrying the insignia of America's leading railroads, these Diesels and 856 others, ordered last year by 60 railroads, have exterior sheathing and doors of MET-L-WOOD as standard construction.

This outstanding material has many particular advantages for railroad service, and is being widely used in luxury car interiors for panels, bulkheads, heading, wainscoting, doors, luggage shelves, cabinets, and table tops. It is ideally suited for caboose doors, for exterior and interior decorative construction of city ticket offices, and for modernizing existing station facilities.

MET-L-WOOD combines great strength for durability and safety with amazing lightness for economy. It can be worked almost as easily as ordinary wood, and requires minimum installation effort when prefabricated and processed to specific design requirements. It deadens sound, damps vibration, resists fire, and maintains a smooth surface in service, without buckling or warping.

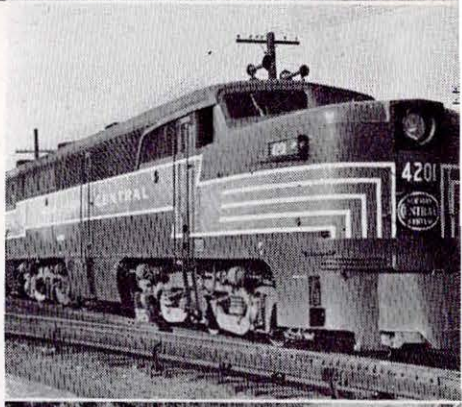
The story of MET-L-WOOD is told in a new 12-page brochure. A copy will be sent at your request.

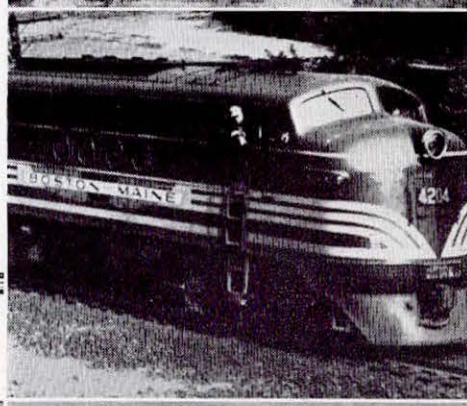
Our engineering staff will gladly help you design and produce better and less costly products with MET-L-WOOD.



MET-L-WOOD CORPORATION

6755 West 65th Street, Chicago 38, Illinois

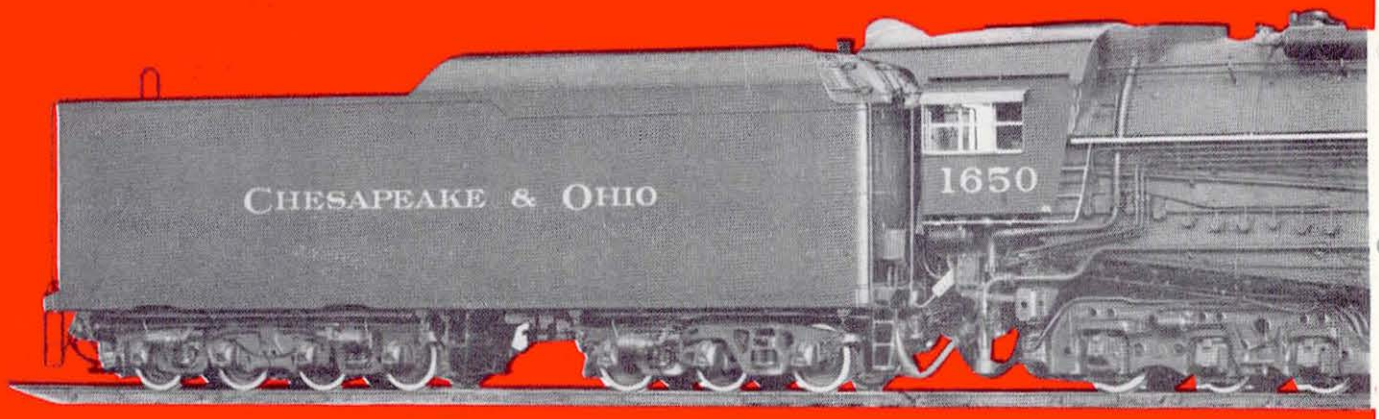




15 MORE SYPHON-EQUIPPED LOCOMOTIVES *on the* C & O

Each locomotive is equipped with three Syphons, adding 162 square feet to firebox heating surface. These modern steam locomotives develop a drawbar pull of 117,500 pounds ... haul trains of 160 loaded cars at lowest operating and maintenance costs. Proof that ...

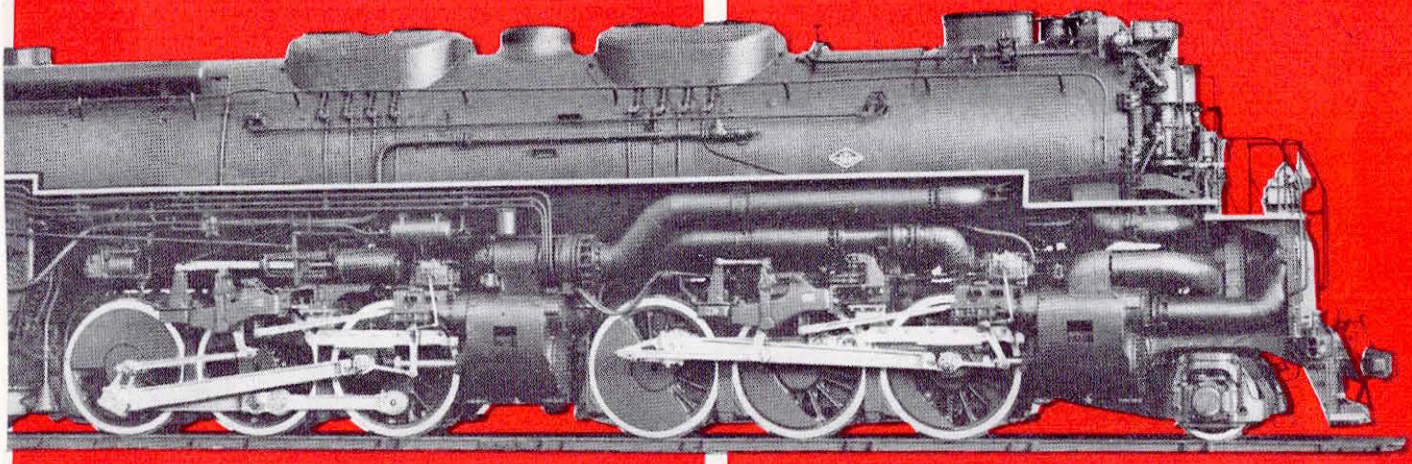
.... SYPHON LOCOMOTIVES ARE BETTER



NICHOLSON THERMIC SYPHONS ARE A PRODUCT OF

- More Heating Surface
- More Boiler Water Circulation
- More Economy in Fuel and Maintenance
- More Boiler Horsepower

• MORE LOCOMOTIVE!



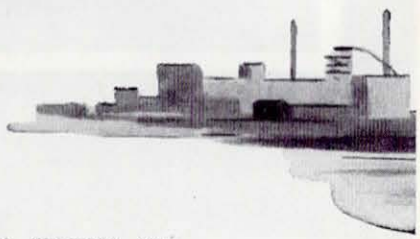
Courtesy of Lima Locomotive Works

Locomotive Firebox Company

PHILADELPHIA CHICAGO MONTREAL

What makes 'em all alike?

The final drive's Electric!



They may *look* different . . . their prime movers *are* different, but their final drive is *the same.*

Diesel electric, steam turbine electric, gas turbine electric and conventional electric—all depend on electric transmission because—regardless of the power source—electric transmission means:

Constant rail hp over normal operating range of the locomotive . . . Multiplicity of lightly-loaded driving axles, with maximum locomotive weight used for adhesion . . . Exceptionally high drawbar pull—both for starting and running . . . Increased train tonnage . . . Easier handling of heavier trains . . . Marked reduction of helper service over ruling grades . . . Electric braking on long, descending grades.

Consider these advantages of electric motive power with an eye toward improvement of all phases of your railroad operation. Get in touch with your nearby Westinghouse office, or write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-95147

YOU CAN BE **SURE**.. IF IT'S

Westinghouse

Write for the new, authoritative presentation of modern motive power. Ask for B-3706.

Westinghouse

PARTNER IN

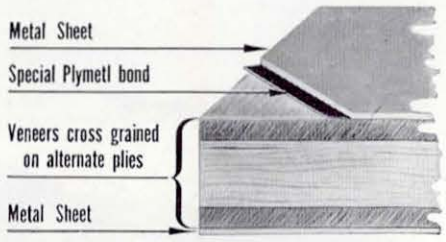
RAILROAD PROGRESS

HASKELITE Plymetl - KNOWN BY

As further emphasis is placed upon faster transportation with greater passenger luxury, more and more railroads are turning to Plymetl, the metal-clad plywood. For, the use of Plymetl helps to eliminate deadweight from bulkheads, partitions, frieze panels, wainscoting panels, pier panels and doors. (For example: ½" Aluminum Plymetl saves from .4 to 3 lbs. per square foot of area over other types of construction.) It increases passenger comfort because Plymetl is sound deadening and reduces vibration and wheel noises. Smooth and flat, Plymetl takes a beautiful finish.

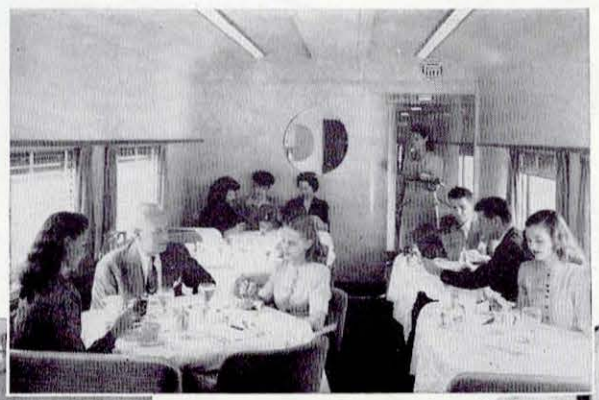
Plymetl is highly resistant to shocks and vibration. Molded round corner sections are available to make partition installations that will harmonize perfectly with the most modern interior designs. Easily fabricated with simple machinery or hand tools, Plymetl reduces fabricating time and contributes greatly to speedier production.

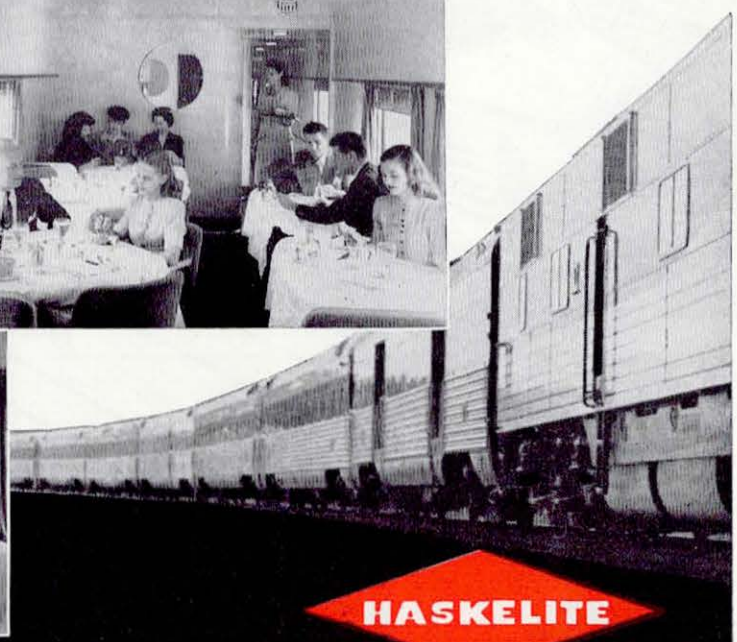
Plymetl unites the best qualities of wood and metal into a structural material that is far superior to either wood or metal separately. It is produced by bonding light gauge metals to one or both sides of plywood panels. This construction effects the most efficient distribution of these materials, combining the high tensile strength qualities of the metal surfaces with the stiffness of plywood.



At right: Plymetl bulkheads and partitions give the diner on the PERE MARQUETTE, new streamliner of the Chesapeake and Ohio Railway, a clean, neat appearance.

Below: Notice how the Plymetl harmonizes with the modern design of The PERE MARQUETTE'S Club car.





HASKELITE ®

HASKELITE MANUFACTURING CORP. DEPT. RR, GRAND RAPIDS, MICH.

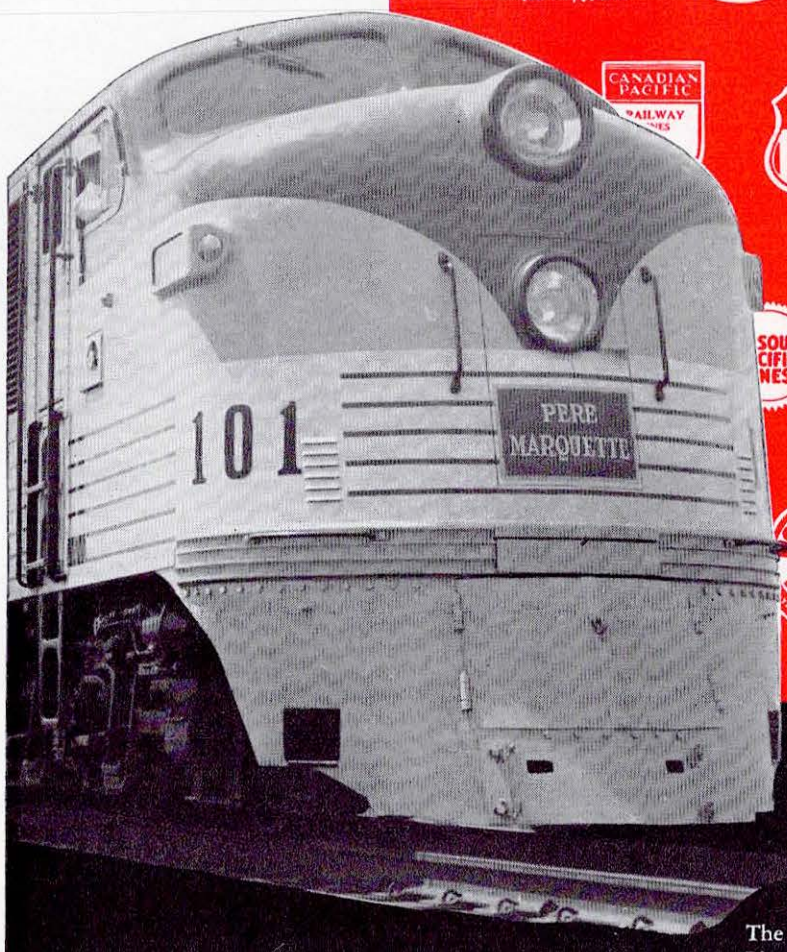
New York Chicago Detroit St. Louis Philadelphia Los Angeles

CANADA: Railway & Power Engineering Corp., Ltd.

THE COMPANY IT KEEPS

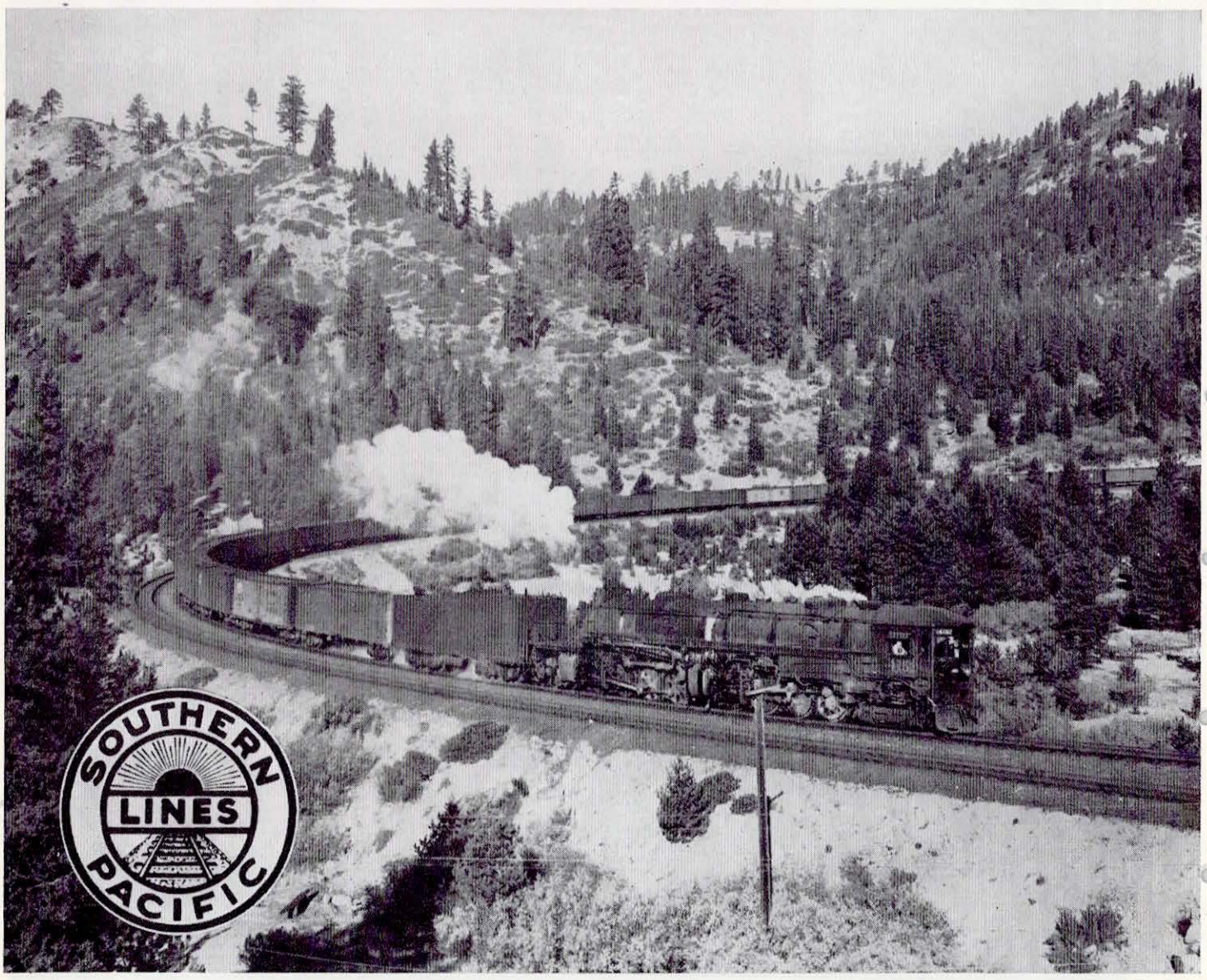
THESE LEADING RAILROADS USE PLYMETL

Two new streamliners were recently added to the Chesapeake and Ohio Line to give their passengers a faster, more comfortable ride. In keeping with this purpose, Plymetl was used for interiors.



The new catalog: "Plan With Plymetl" contains useful information on Plymetl. Write for your free copy today.

STEAM



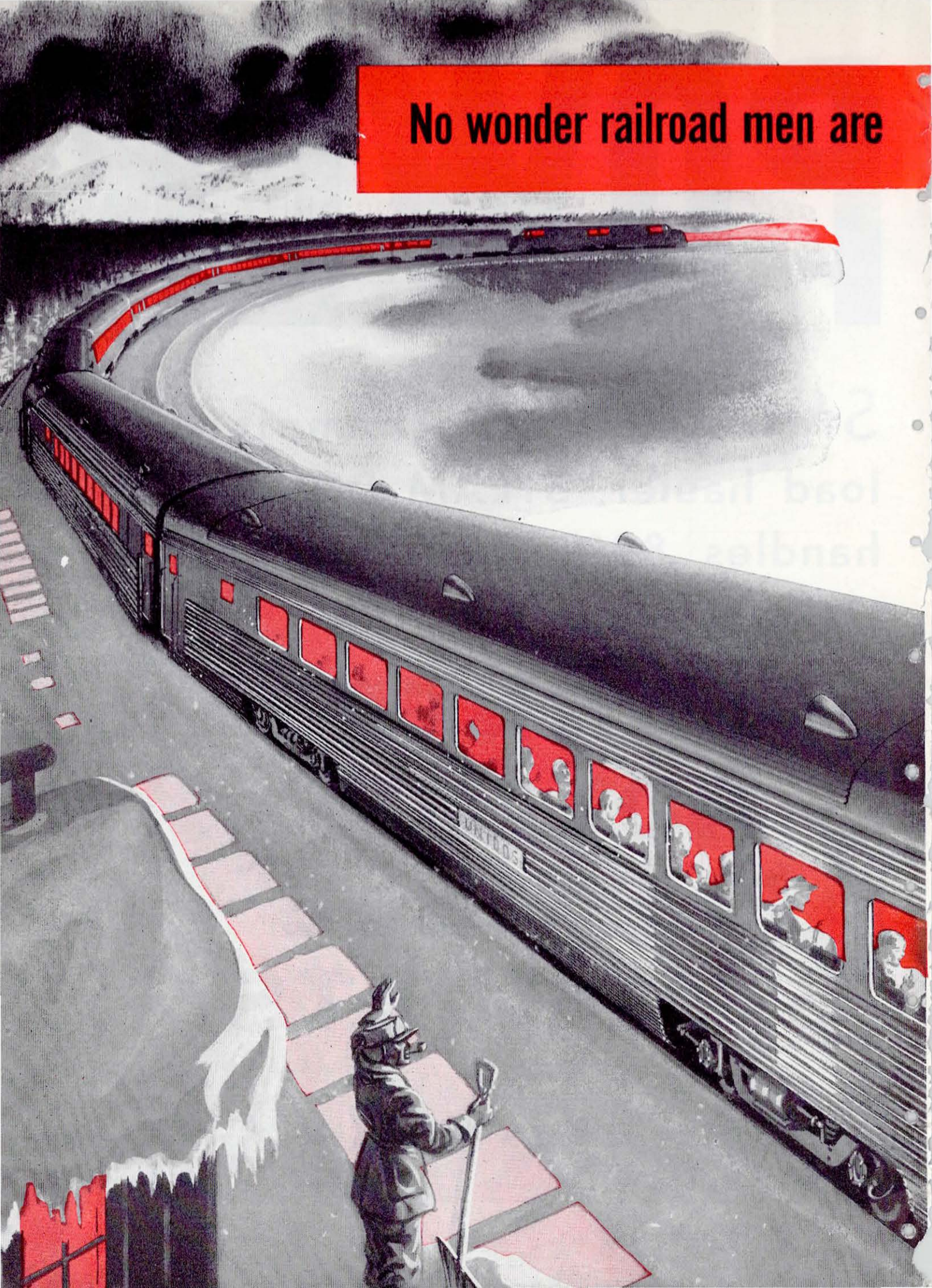
FLANNERY BOLT

POWER

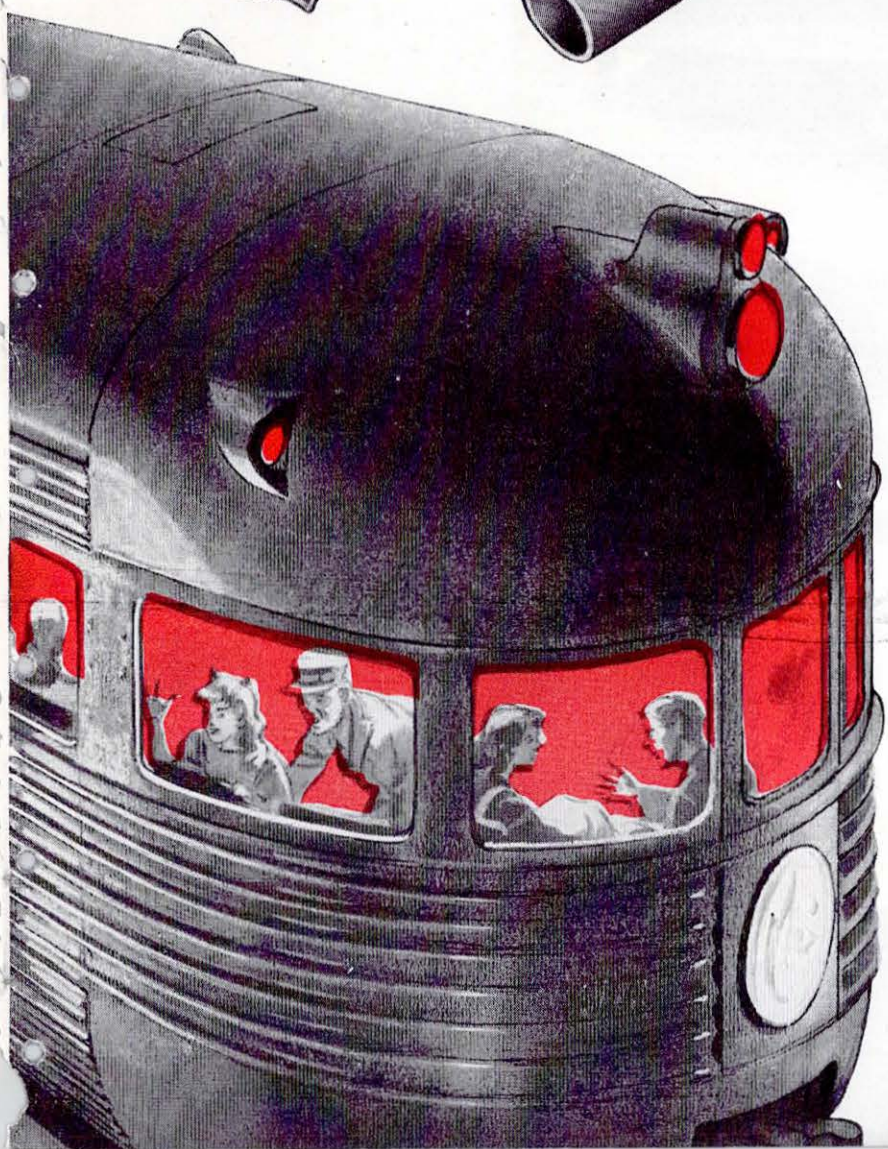
Still America's champion load hauler, STEAM POWER handles 83% of the freight train mileage . . .

FLANNERY HOLLOW FLEXIBLE STAYBOLTS

COMPANY BRIDGEVILLE PENNSYLVANIA


No wonder railroad men are

WEATHER VAIN!

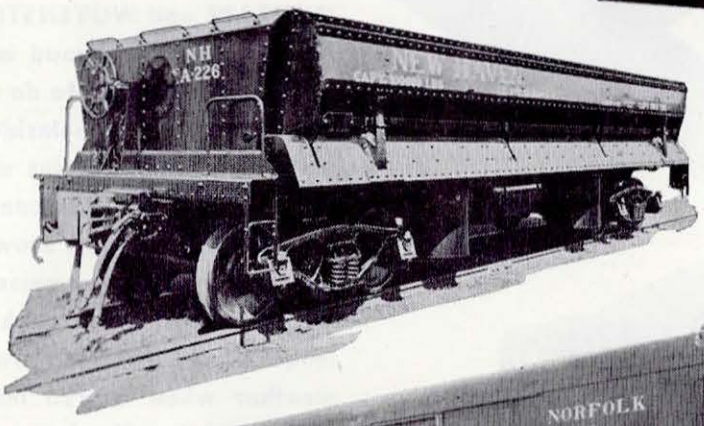


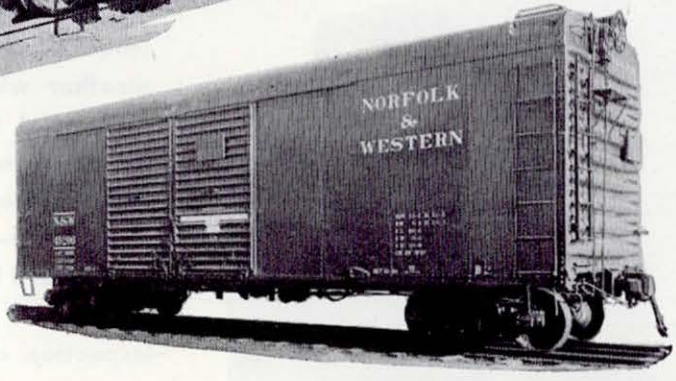
INSUTAPE and WOVENSTONE make it possible for railroad mechanical and operating personnel to do something about the weather—inside cars. No matter how long trains may be, Insutape and Wovenstone protect piping from ice and snow, sleet and slush—protects against heat losses as steam courses through pipes the full length of the train. It's always fair weather when Unarco insulation and piping get together! Weather-proof, ballast-proof and fire-proof, Insutape and Wovenstone have provided trouble-free, day-in, day-out service on thousands of cars and locomotives for years. Both can be applied, removed for pipe inspection and reapplied in a jiffy!

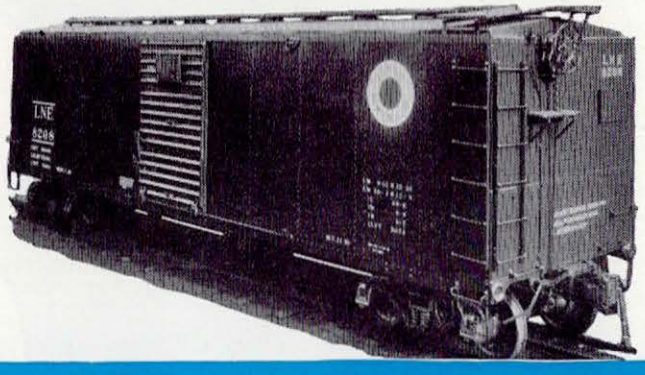
UNARCO

UNION ASBESTOS & RUBBER CO.
332 S. Michigan Avenue, Chicago 4, Illinois
New York • San Francisco

Magor





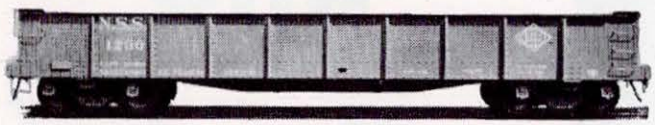


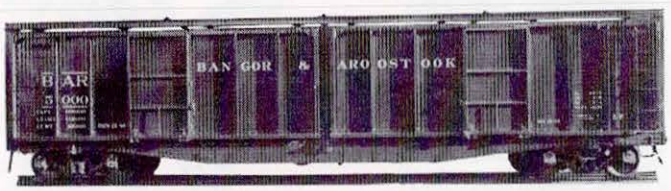
MAGOR CAR CO

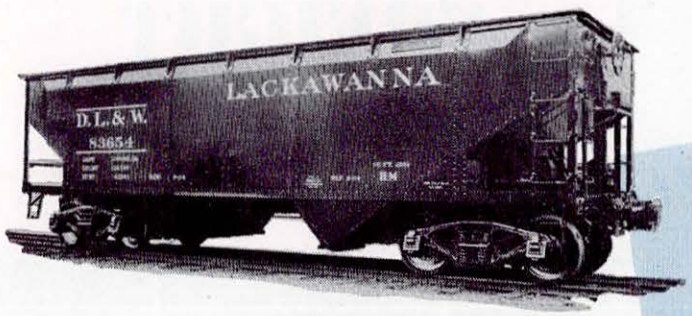
FOR

DESIGN AND MANUFACTURE FREIGHT CARS

AUTOMATIC AIR DUMP CARS





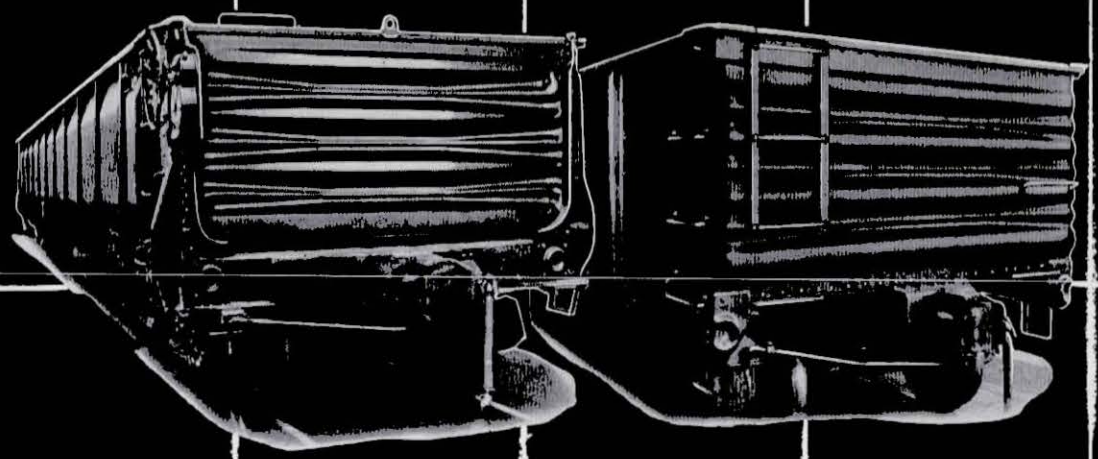


Cars Purchased from Magor Reassure Their Owners—They Are Revenue-Producers

R P O R A T I O N

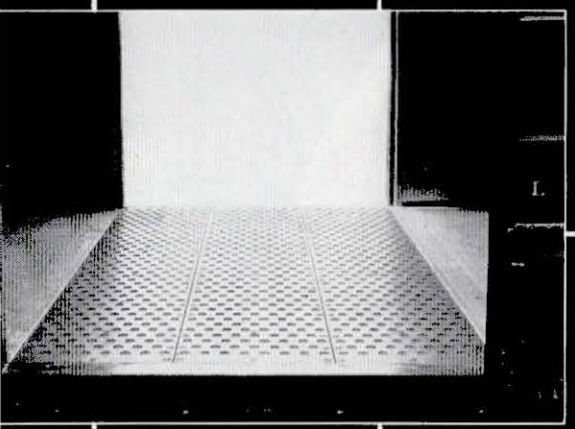
50 Church Street

New York 7, N. Y.

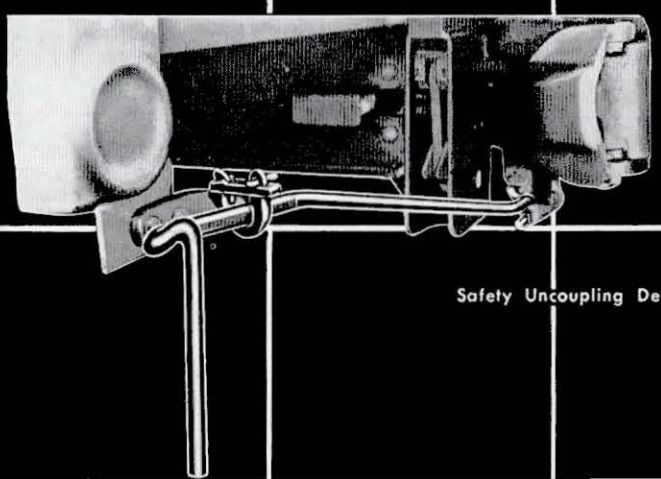


Drop Ends and Rigid Ends for Gondola Cars

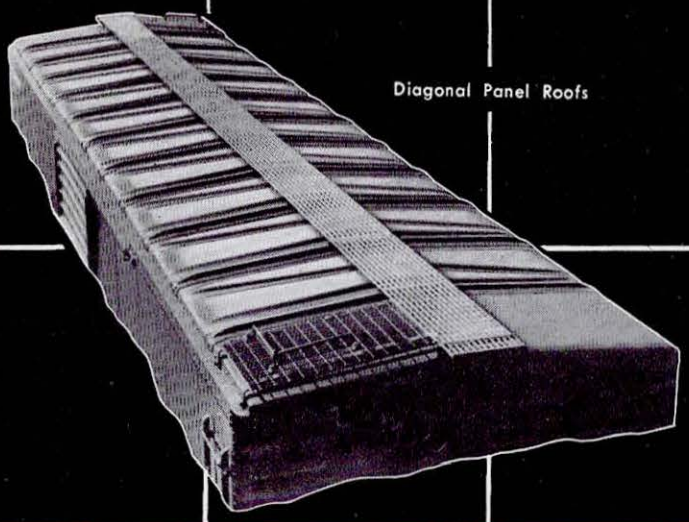
HOW *Standard* MAKES FREIGHT PROGRESS



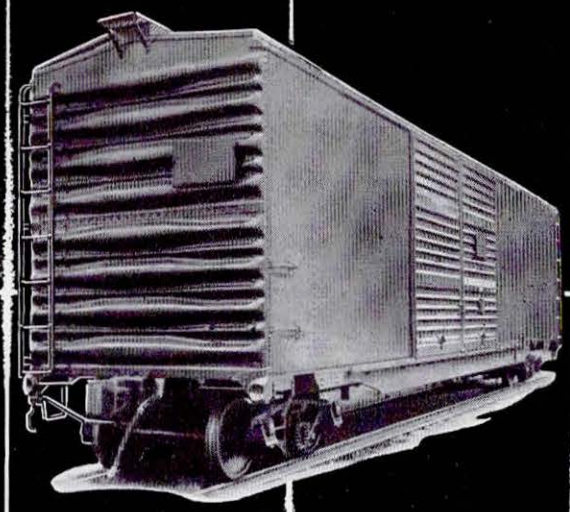
Metal Floor Protectors



Safety Uncoupling Device



Diagonal Panel Roofs



Improved Dreadnaught Ends

Because American Railroads operate on a narrow profit margin, they must have rugged and dependable freight equipment, and . . .

Maintenance costs and "bad orders" must be held to a minimum.

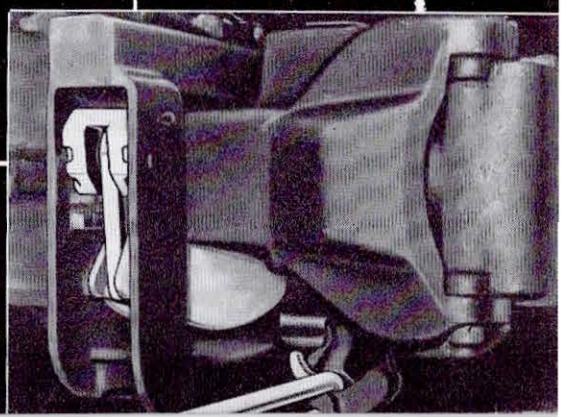
Standard Products are developed with these "musts" as their base specification, therefore . . .

Standard Products are all "musts" in your base specifications.

STANDARD RAILWAY EQUIPMENT MANUFACTURING COMPANY

"The World's Largest Fabricator of Railway Car Specialties"

310 South Michigan Avenue, Chicago 4 · 247 Park Avenue, New York 17



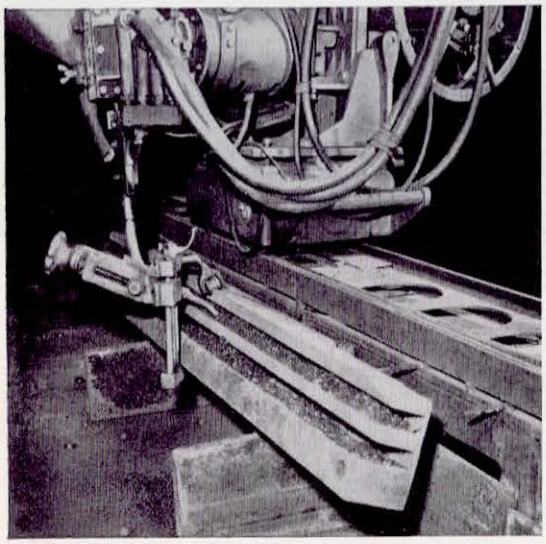
Centering Device with Coupler Height Adjustment

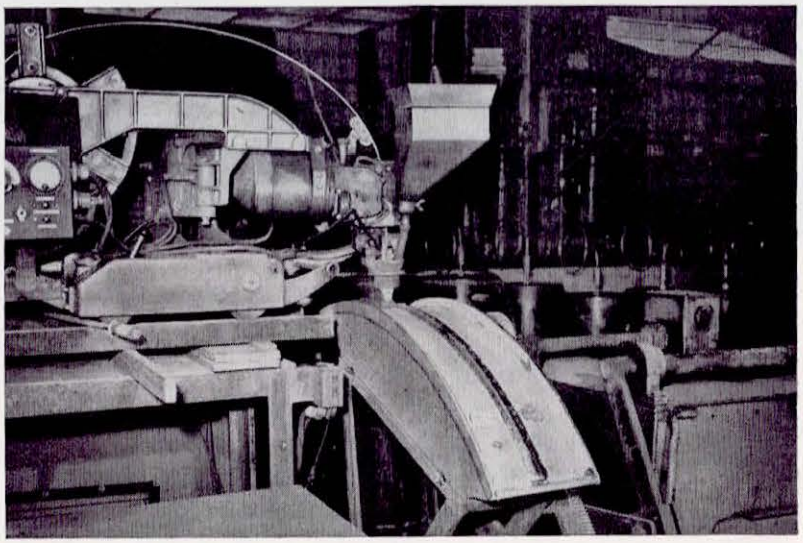
Having Trouble Getting New Parts?

. . . Rebuild worn metal parts by the UNIONMELT welding process

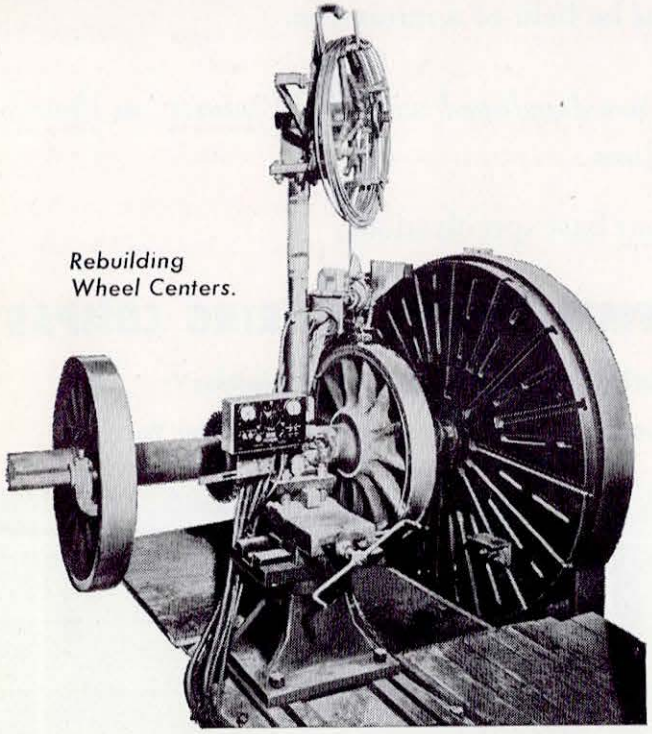
Trade Mark

This automatic process saves time and money — welding is fast — parts are returned to service quickly — new surfaces are often superior to original —





Left: Rebuilding Multiple Guide. Right: Rebuilding Buffer Casting.



Rebuilding Wheel Centers.

Almost any part that can be suitably positioned can be rebuilt by the UNIONMELT welding process. It is being used successfully on parts such as buffer castings, plain and multiple guides, locomotive trailer wheels, driving boxes, piercing plungers and crane wheels.

Deposits of almost any thickness can be made of —

High carbon, flame-hardenable steels
Wear-resistant and hard-facing materials
Corrosion- and heat-resistant steels

With the UNIONMELT electric welding process, clean, dense, uniform weld metal can be deposited at the highest known welding speeds. There is no glare, flash, or spatter during welding. To attain a finished surface, minimum machining is required because of the smoothness of the weld deposit.

Write for F-7164 which shows UNIONMELT welding work done in railroad shops with OXWELD'S help.

THE OXWELD RAILROAD SERVICE COMPANY
Unit of Union Carbide and Carbon Corporation
UCC
Carbide and Carbon Building Chicago and New York
In Canada:
Canadian Railroad Service Company, Limited, Toronto

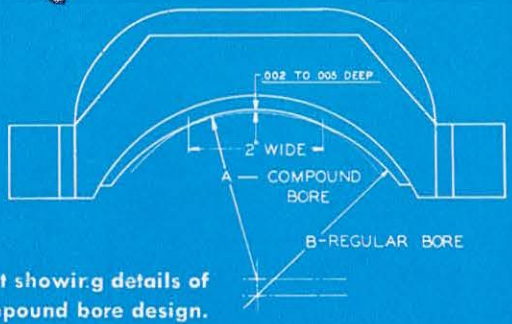
OXWELD RAILROAD SERVICE

SINCE 1912—THE COMPLETE OXY-ACETYLENE SERVICE FOR AMERICAN RAILROADS

The terms "Oxweld" and "Unionmelt" are registered trade-marks.

Standard or Compound Bore...YOU CAN ALWAYS RELY ON N-B-M JOURNAL BEARINGS

Standard A. A. R. journal bearing. Available in any required size.



Print showing details of compound bore design.

Actual "bluing-in" illustrates wide contact area obtained without hand scraping.

N-B-M leadership in the journal bearing field can bring you lower bearing costs—and bigger net ton-miles per day.

N-B-M JOURNAL BEARINGS— IMPROVED THROUGH THE YEARS

Yes, figures taken from Railroad Facts, 1948 edition, give an excellent testimonial to the big improvement in standard journal bearing efficiency through the years. Railroads actually show an increase of *85.8% in net ton-miles per day, in freight service,* as shown by the figures below:

	1926	1947	% Increase
Average Car-Miles per Day	32.6	48.8	49.7%
Av. Frt. Car Capacity: Tons	45.1	51.4	14 %
Av. net ton-miles per car per day	569	1057	85.8%

Specify N-B-M Journal Bearings—millions of passenger-miles and ton-miles are your assurance of bearings that give better service under conditions of high speeds, heavy loads and heavy impacts.

N-B-M COMPOUND BORE JOURNAL BEARINGS—IMPROVED FOR THE FUTURE

The new N-B-M Compound Bore Journal Bearing reduces hot boxes and lowers maintenance costs—facts that have been proved in actual service with many leading railroads. These "pre-seated" bearings provide a precision fit on standard axles and a closer fit on undersized axles. This "precision-fit" permits sufficient journal-contact area to insure, right from the start, the formation of fluid lubricating film that is so vital to a shorter, lower temperature run-in period.

The Compound Bore Bearing is another example of how N-B-M sets the pace with improvements in bearing design—leadership that helps railroads obtain higher efficiency and greater economy.

N-B-M—Serving America's Railroads since 1874 with a complete line of Journal Bearings, Engine Bearings and Bronze Parts.

AMERICAN Brake Shoe COMPANY

NATIONAL BEARING DIVISION

4930 Manchester Avenue • St. Louis 10, Mo.

PLANTS IN: ST. LOUIS, MO. • MEADVILLE, PA. • NILES, OHIO • PORTSMOUTH, VA. • ST. PAUL, MINN. • CHICAGO, ILL.

Flame Cleaning

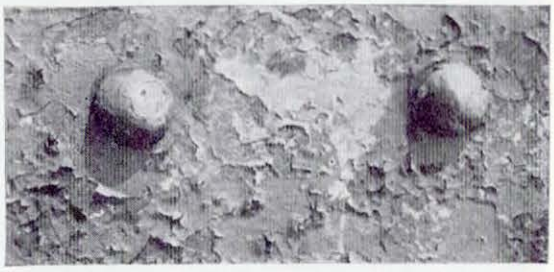
prepares bridge members for painting

Leading railroads find that flame cleaning quickly prepares bridges, trestles and other metal surfaces for painting—*with savings up to one half the cost of hand scraping and chipping*. Further, in addition to actual dollar savings, they found that the flame cleaned surface produced a better finished paint job.

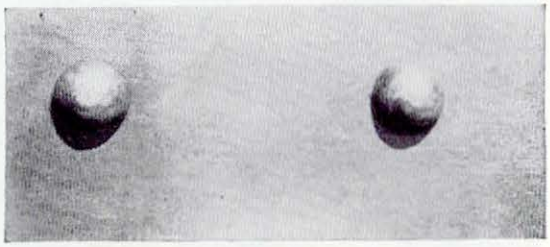
Quickly, easily and safely applied, the Airco flame cleaning process provides a clean, warm and dry surface conducive to a lasting paint job. The oxyacetylene flame cockles old paint, loosens scale and drives off hidden moisture . . . gives longer paint life to all kinds of steel structures.

New steel structures, too, should be flame cleaned before application of the prime coat of protection. This method loosens semi-tenacious mill scale and leaves no corrosion-starting dirt or hidden moisture. Future maintenance costs are reduced to an absolute minimum.

For further details write for folder ADG-1066B — "Flame Cleaning and Dehydrating Old Steel Structures", and folder ADG-1067A—"Flame Cleaning and Dehydrating New Steel Structures". Address: Dept. REM-7320, Air Reduction, General Offices: 60 East 42nd Street, New York 17, N. Y. In Texas: Magnolia Airco Gas Products Company, Houston 1, Texas. Represented Internationally by Airco Export Corporation.



BEFORE — *Close-up view shows conditions of paint-lift heavy rust and scale that were met.*



AFTER — *The finished job after flame cleaning. A smooth, clean, dry surface ready for a lasting coat of paint.*

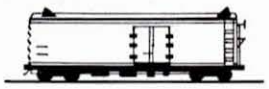
Costs come down under the Airco Plan

AIRCO **AIR REDUCTION**

Offices in All Principal Cities

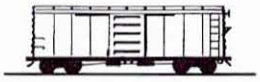
Right for Every Need

IN THE PAST FIVE YEARS, THE SMOOTH-ROLLING A.S.F. RIDE-CONTROL TRUCK HAS BEEN SPECIFIED FOR



- over 20,000 refrigerator cars, because it *protects lading*

- more than 48,000 hoppers and gondolas, because it *reduces maintenance* on car and roadbed, both



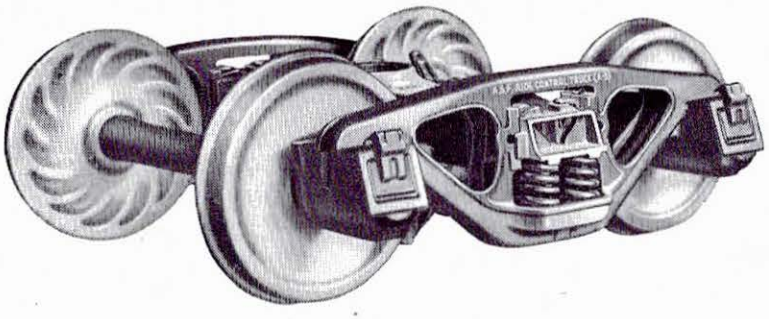
- nearly 62,000 box cars, because it's *so easy* on rolling stock and contents

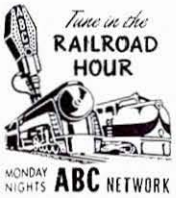
- box-express service on ten different lines, because it's truly the *all-speed truck*

Users know that the Ride-Control Truck is built to beat high maintenance and keep revenue rolling at lowest cost —*whatever* the service requirements.

A-S-F *Ride-Control* TRUCK

CONSTANT FRICTION CONTROL
LONG SPRING TRAVEL





AMERICAN STEEL FOUNDRIES

MINT MARK OF ⬡ FINE CAST STEEL

WHERE Full Carloads Turn Turtle AT A Finger-Touch

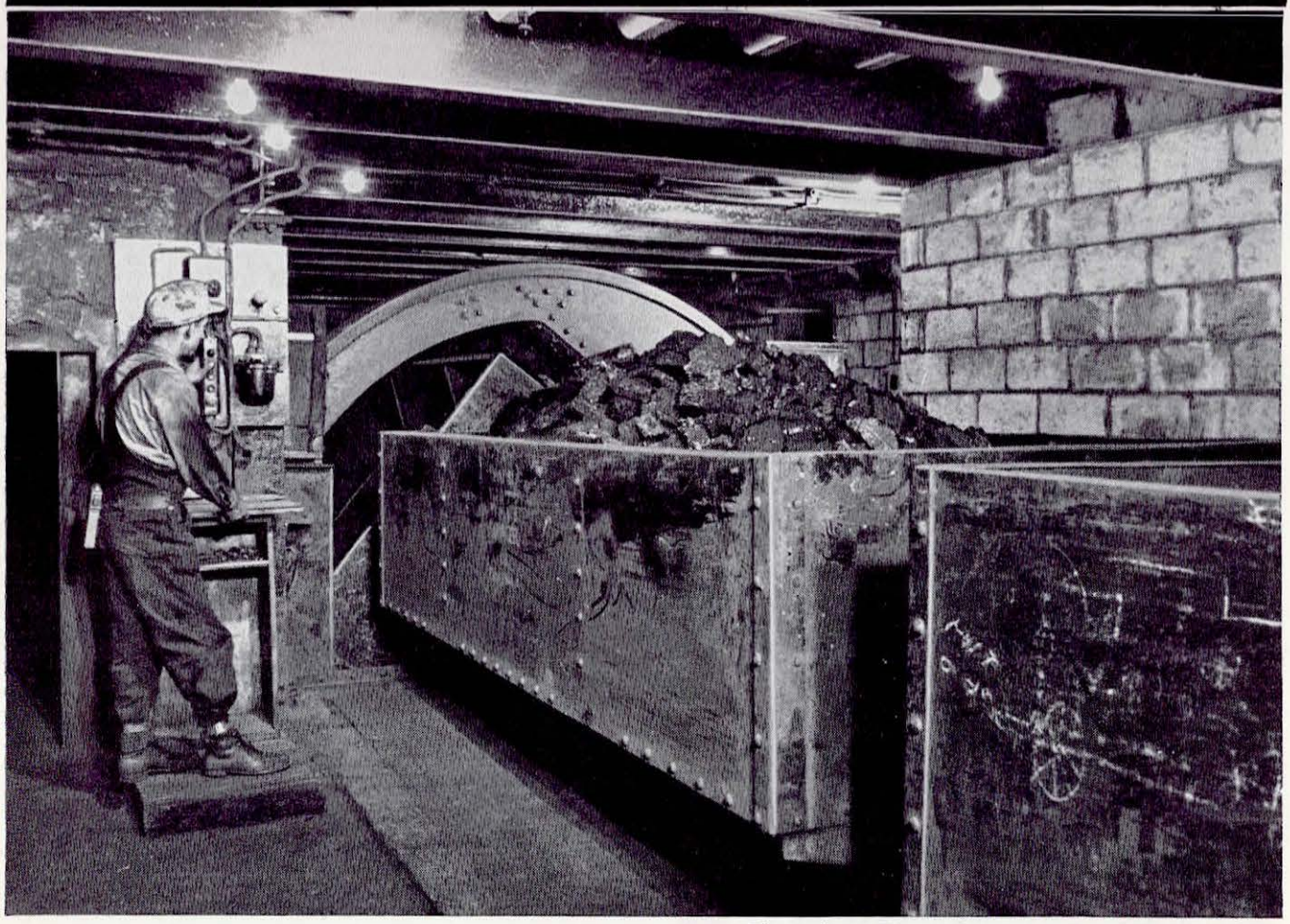


Photo taken in West Virginia coal fields by William Vandivert

This is the "ground floor" of a modern coal mine—the point from which coal, dug from seams deep in the earth, starts upward on its way to work for you. Here, as each car moves into the rotary dump shown, a touch of a button rolls it over, emptying the coal into an elevator-like hopper that speeds it to preparation plants above.

Such equipment as this, along with machines that cut, load, and convey coal, illustrate the tremendous investment progressive operators are making to provide all America with quality coal.

To provide this flood of coal consistently and safely, the industry is continuing its vast mechanization program. With an eye to coal's enlarging scope as a source of modern industrial energy, operators are currently investing more than a billion dollars for improvements and new facilities.

Living and working conditions of miners keep step with the industry's rapid development of faster, more efficient mining methods.

Today almost two-thirds—over 260,000—of the nation's bituminous coal miners either own their own homes, or rent from private landlords. The remaining one-third live in company-owned houses at rentals below those ordinarily available to workers in other industries.

Underground, too, progress in coal mining techniques is constantly producing safer working conditions. Powerful ventilating systems and electric lighting in car switching areas are among the many factors now making America's mines safer than ever before.

BITUMINOUS COAL

BITUMINOUS COAL INSTITUTE

A DEPARTMENT OF NATIONAL COAL ASSOCIATION

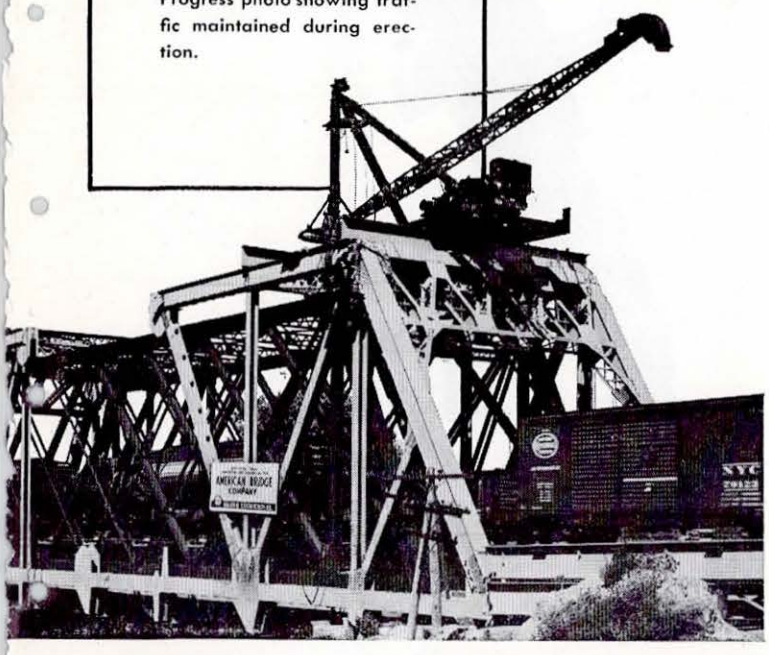
WASHINGTON, D. C.

BITUMINOUS COAL . . . LIGHTS THE WAY . . . FUELS THE FIRES . . . POWERS THE PROGRESS OF AMERICA

View showing truss erection nearing completion. Erection was by locomotive crane and stiffleg derrick. Closure at center, top chord section was made by jacking at near end of trusses.

Bridge designed for Cooper's E-65 loading to current AREA Specifications. Estimated weight 600 tons.

Progress photo showing traffic maintained during erection.



New bridge "swallows" old

Rail traffic was uninterrupted when American Bridge Company erected this 190′ double-track truss span around the old span across the Boyer River near Arion, Iowa.

In addition to designing, fabricating and erecting this and two other nearby bridges for Chicago and North Western Railway Company, American Bridge removed the three old spans.

We cite this project as further evidence that for fabrication and erection efficiently done, you can depend on American Bridge.

AMERICAN BRIDGE COMPANY

General Offices: Frick Building, Pittsburgh, Pa.

Contracting Offices in: AMBRIDGE · BALTIMORE · BOSTON · CHICAGO · CINCINNATI · CLEVELAND · DENVER
DETROIT · DULUTH · ELMIRA · GARY · MINNEAPOLIS · NEW YORK · PHILADELPHIA
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UNITED STATES STEEL EXPORT COMPANY, NEW YORK

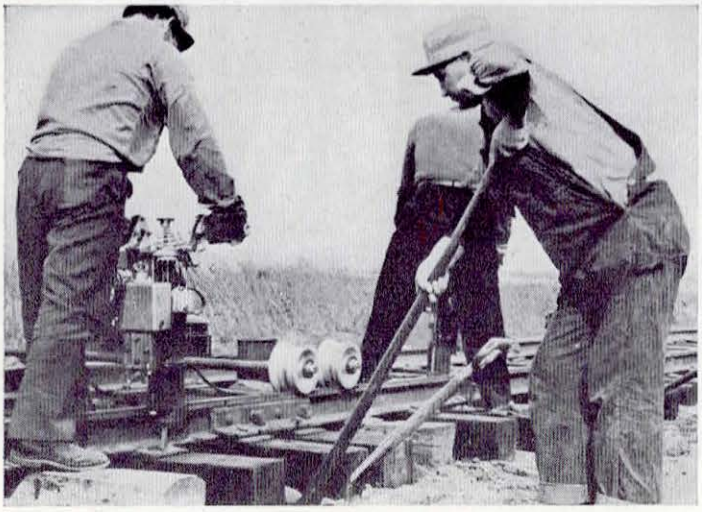
USS

AMERICAN BRIDGE

UNITED STATES STEEL

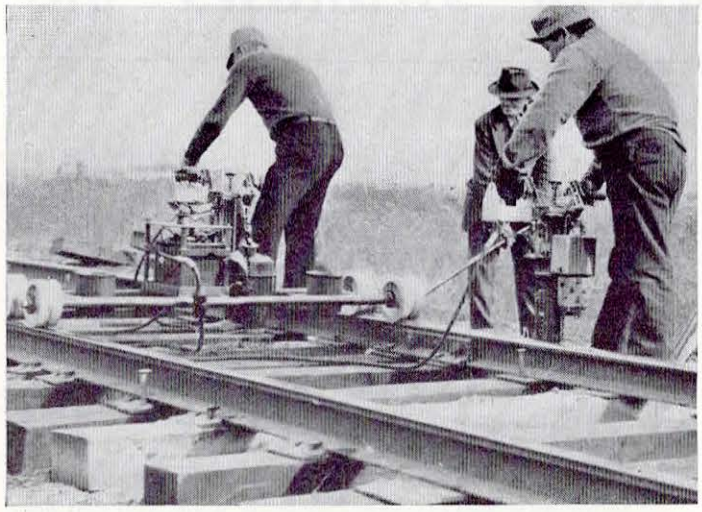
DOES NOT INTERFERE WITH RAIL TRAFFIC...

The **BARCO** *Spike Driver*



The Barco Spike Driver may be used singly or in a crew. It does not interfere with rail traffic, as is the case with large equipment.

Here's the spike driver that's built to do a faster, better job and cut down operating costs. Light in weight, strongly yet compactly built, the Barco does not interfere with rail traffic, as one man may lift the carriage on or off the track. Barco drives anchor spikes and spikes around turnouts, cross-overs and inter-locking switches. It can be operated by one man, with or without the carriage. For further information write Barco Manufacturing Company, 1800 Winnemac Avenue, Chicago 40, Illinois. In Canada: The Holden Co., Ltd., Montreal, Canada.



If desired, this light track carriage may be used. It can quickly be removed from the track for passing trains, and can hold one or two spike drivers. Particularly desirable for scattered spike driving such as renewing ties.

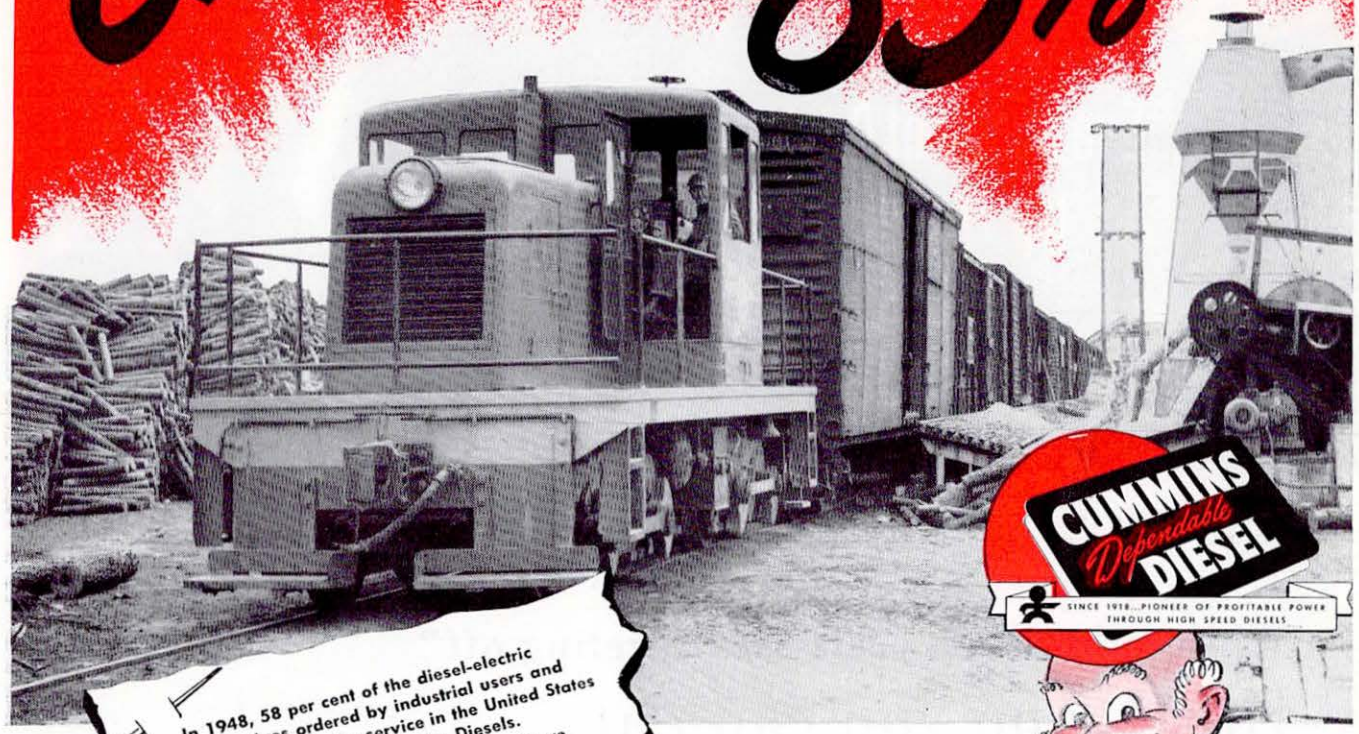
SPIKE DRIVER

BARCO

FREE ENTERPRISE—THE CORNERSTONE OF AMERICAN PROSPERITY

CUMMINS

Cuts Fuel Costs 85%



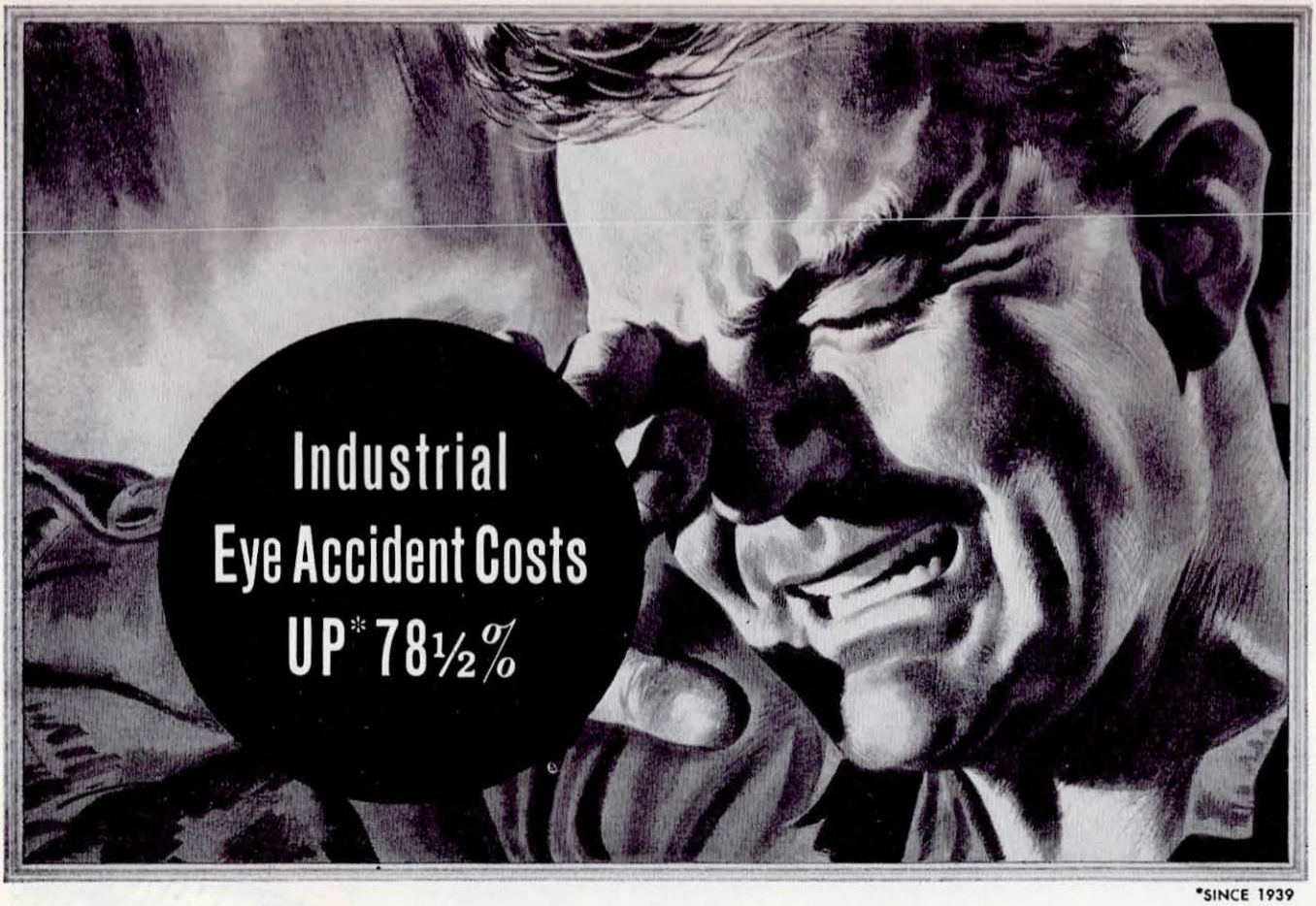
In 1948, 58 per cent of the diesel-electric locomotives ordered by industrial users and private rail lines for service in the United States were powered with Cummins Diesels.
(Source: January 8, 1949 Annual Statistical issue, Railway Age.)

Powered with two Model HBI-600 Cummins Diesel Engines, a 45-ton G-E locomotive replaced a steam locomotive and cut fuel costs 85 per cent in the first six months of operation for Southland Paper Mills, Inc., Herty, Tex.

Southland cost records indicate that the two Cummins Diesels will approach $8,000 in fuel savings alone in their first year of operation . . . will pay for the locomotive in about three and one-half years.

This Cummins-Powered switcher also saves on operating costs. It handles 15-car trains weighing more than 1,200 tons, works on five per cent grades, and is in use 56 hours a week. Write for information about cost-saving Cummins Diesels on your job.

CUMMINS ENGINE COMPANY, INC., COLUMBUS, INDIANA
Cummins Diesel Railroad Equipment Company, Inc. • 1111 Grinnell Place • New York 59, N.Y. • Cable Address: MOTORTRAIN



*SINCE 1939

While other high costs are "leveling off"

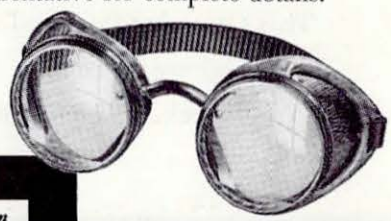
Here's one you can cut to INSIGNIFICANCE

NOW!

You don't have to wait for *favorable* market conditions to cut industrial eye accident costs. *The costs of eye accidents are always high—but the cost of the protection that prevents *98% of the injuries is always infinitesimal in comparison.*

Typical Case: A machinery manufacturer saved $42,000 in annual eye accident costs after installing an AO eye protection program. A check of your own eye injury costs and similar positive action can assure important savings for you. Ask your nearest AO Safety Products Representative for complete details.

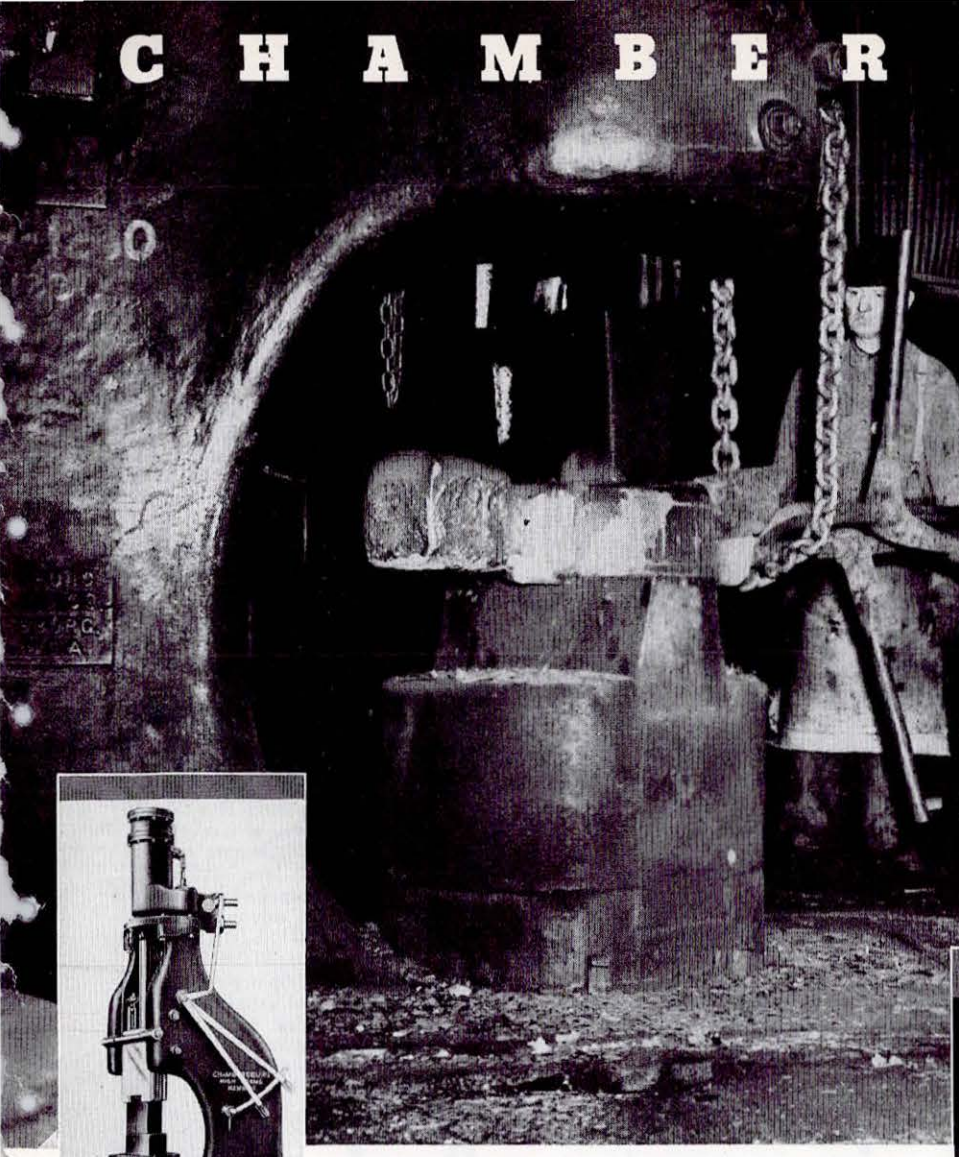
**According to the Society for the Prevention of Blindness 98% of industrial eye accidents are prevented when shop workers wear safety goggles.*

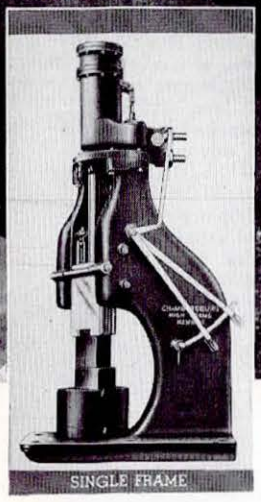


American Optical COMPANY — *Safety Products Division*

Southbridge, Massachusetts
Branches in Principal Cities

CHAMBERSBURG

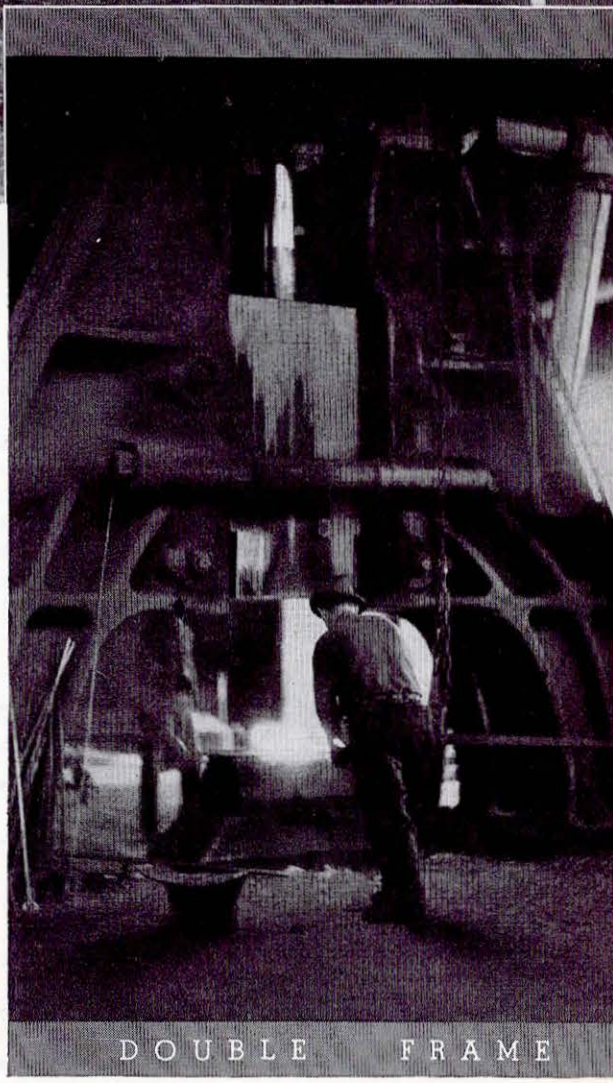




SINGLE FRAME

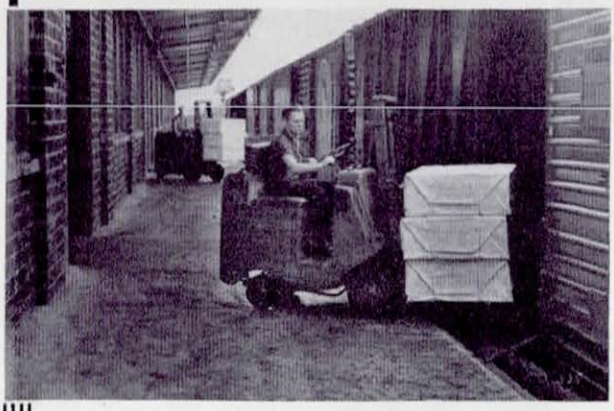
MODEL "L" FLAT DIE FORGING HAMMERS

Greater economy from new automatically lubricated small-bore cylinder and differential valving; more production on heavier anvil. Have you checked on these Model "L" hammers?



DOUBLE FRAME

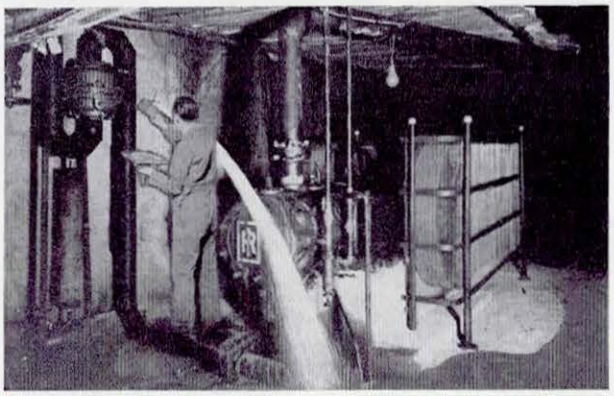
3 WAYS HOW YOU CAN SAVE MONEY



PATCH or RESURFACE RUTS and HOLES

1. RUTS and holes in your platforms, warehouse floors and driveways *slow* down traffic and cause unnecessary accidents. Railroads and traffic men have found that anyone can simply and quickly patch or resurface with STONHARD RESURFACER — without ripping up old floors or costly delays during repairs. You can have a new, tough, smooth, wear-resistant surface over a week-end or in less than 36 hours. Reduce accidents . . . reduce claims . . . reduce maintenance costs . . . speed up traffic —USE STONHARD RESURFACER.

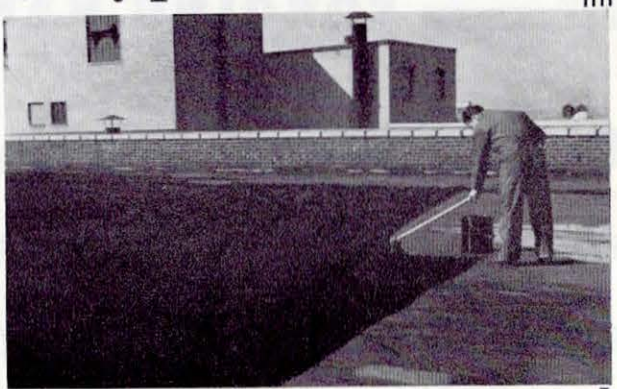
Stop leaks in any type Masonry



2. Leaks and water-seepage in your masonry construction cause extensive damage and expensive repairs. Spalling of walls in tunnels, rusting and mildewing of machinery and materials stored in basements and other below ground storage places, loss of water from reservoirs, water-seepage in signal and elevator pits — these are only a few of the conditions STONHARD STONTITE quickly and effectively corrects. STONHARD STONTITE stops leaks in all types of above and below ground, interior and exterior masonry, and concrete construction. Used successfully and repeatedly by Railroads, Industries, Municipalities and Public Utilities all over the world.

Stop leaks in any type Roof

3. Before you undertake the expense of ripping off your old roof and relaying a new roof — you will save money by investigating STONHARD ROOF RESURFACERS. STONHARD Liquid or Plastic Roof Resurfacers can be either brushed or trowelled over your old roof by your own maintenance men without involved preparation or heating of materials. They will not check, crack or peel under hot summer sun or severe winter weather. STONHARD ROOF RESURFACERS stop and prevent leaks in any type roof—tin, iron, concrete, slag, gravel, tar paper, or felt.



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Building Maintenance Materials Since 1922

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"Pacemaker"

fast freight cars require dependable door equipment

These ultra modern cars are equipped with

SUPERIOR

STEEL CAR DOORS

and

Ball Bearing Door Fixtures

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McCORMICK BUILDING
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SUPERIOR CAR DOORS

are lighter..tighter..*Superior*

The Bridge that Saved a Railway Money . . .

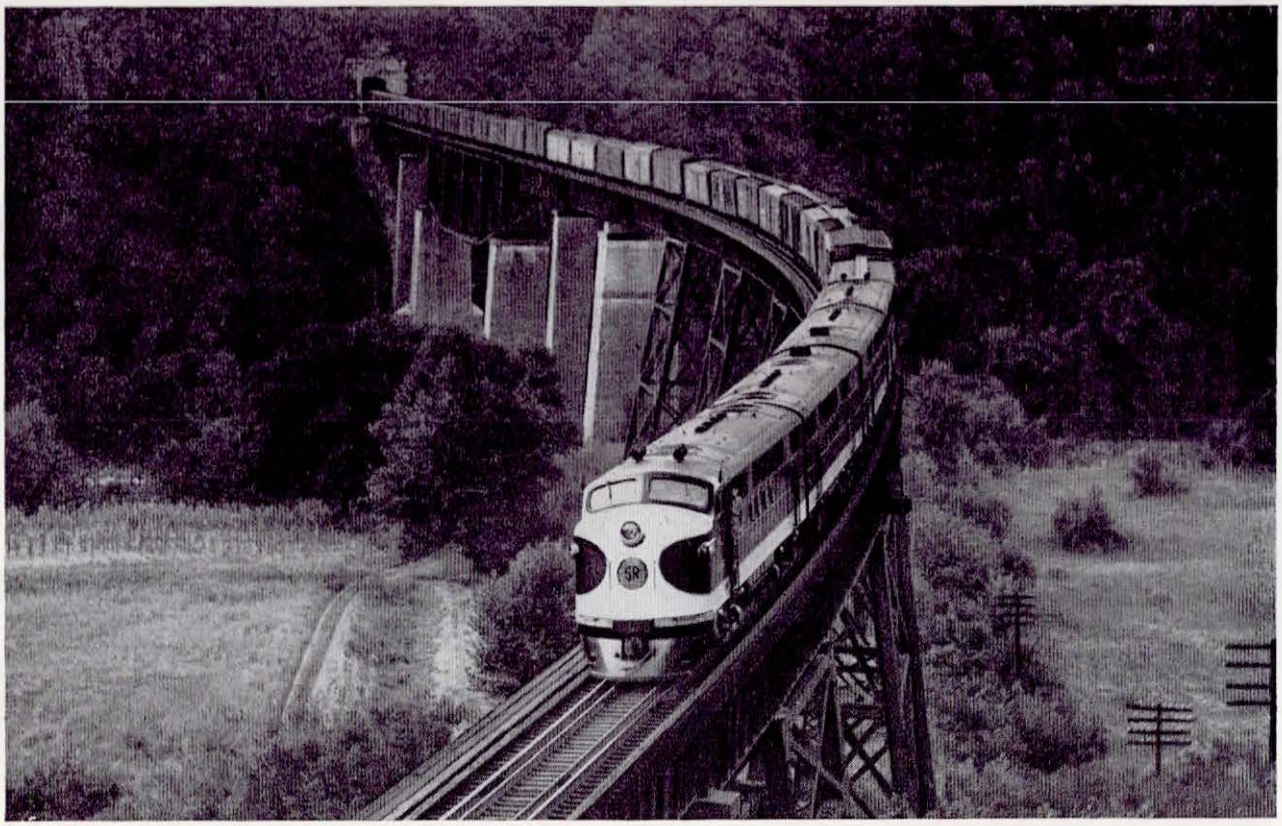


Photo Courtesy Southern Railway System

made with ***Pre-Framed*** Creo-pine Bridge Timbers

Even where trains pass every 20 or 30 minutes, several timbers can be replaced at once with pre-framed Creo-pine Bridge Timbers. In bridges of this type, alert railroad men save up to 50 per cent on installation costs—eliminating hand-framing in the field, where only one timber can be drawn, a new one inserted, adzed, holes bored, etc., on busy tracks. Mill framed, Creo-pine timbers are dapped, bored, and sized before treatment with accuracy not possible in hand-framing. They're shipped ready for use. All Creo-pine products are pressure creosoted for long life. Write for information on Creo-pine bridge timbers and find out how they can save money for you.

CREO-PINE PRODUCTS

Poles	Cribbing	Cross Ties
Cross Arms	Bridge Timbers	Switch Ties

Six holes bored simultaneously on machine designed to bore up to 20 holes, practically any pattern! One of many operations in pre-framing Creo-pine timbers accurately and precisely.

SOUTHERN WOOD PRESERVING COMPANY

ATLANTA, GA.

Representatives in New York, Philadelphia, Toledo, Pittsburgh, Detroit and Chattanooga

For Comfort in the Caboose

insulate with Johns-Manville STONEFELT

THE same advantages which make Stonefelt the ideal insulation for the modern passenger car, adapt it equally well to the job of insulating the modern steel caboose.

Applied in blanket form between the car's exterior and its interior, Stonefelt provides sealed-in comfort regardless of outdoor weather. Strong and light in weight, it is resistant to both fire and moisture. Made of interwoven, specially treated mineral fibres that are very small in diameter and of exceptional resiliency, Stonefelt retains its rated thickness and will not settle even under severe vibration. Its thermal conductivity remains low, its acoustical efficiency high in service.

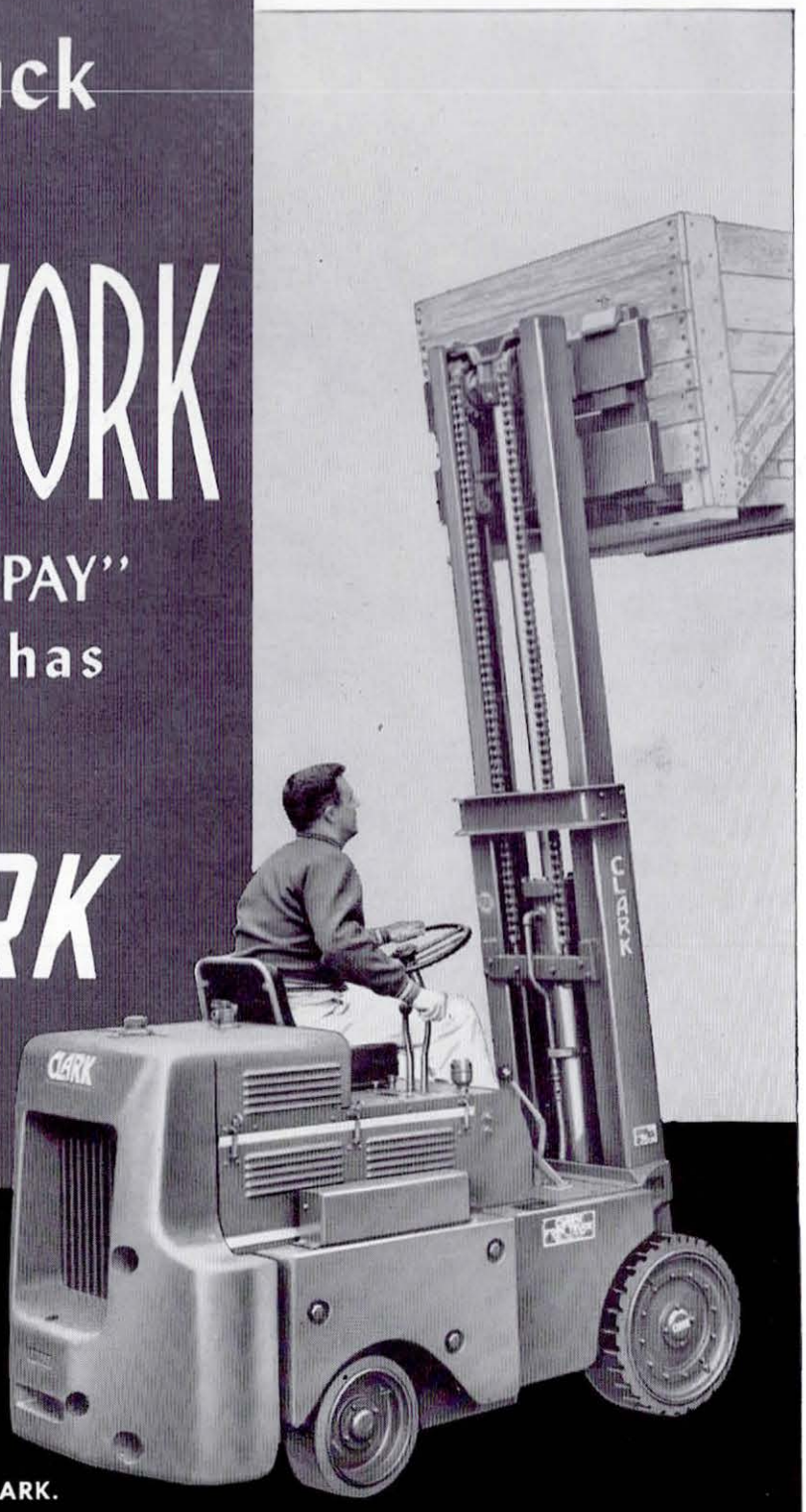
Let us tell you how little it will cost to build "passenger-car" comfort into your new cabooses with Stonefelt. For full information, address Johns-Manville, Box 290, New York 16, New York.

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville

90 YEARS OF SERVICE TO TRANSPORTATION

This Fork Truck DOES MORE WORK FOR LESS "PAY" because it has DYNA-TORK Drive



Available *only* in CLARK'S gasoline-powered Utilitruc, DYNATORK DRIVE eliminates the clutch and conventional transmission. Nothing comparable in the fork-lift-truck field. Benefits so numerous that the important question is: CAN YOU AFFORD TO BE WITHOUT IT?

To help get the answer—to enjoy unsurpassed counsel on any materials-handling matters—CONSULT CLARK. Please direct inquiries on your business letterhead to address listed below.

INDUSTRIAL TRUCK DIVISION

CLARK EQUIPMENT COMPANY

BATTLE CREEK 24, MICHIGAN

AUTHORIZED CLARK INDUSTRIAL TRUCK PARTS AND SERVICE STATIONS IN STRATEGIC LOCATIONS

For Comfort in the Caboose

insulate with Johns-Manville STONEFELT

THE same advantages which make Stonefelt the ideal insulation for the modern passenger car, adapt it equally well to the job of insulating the modern steel caboose.

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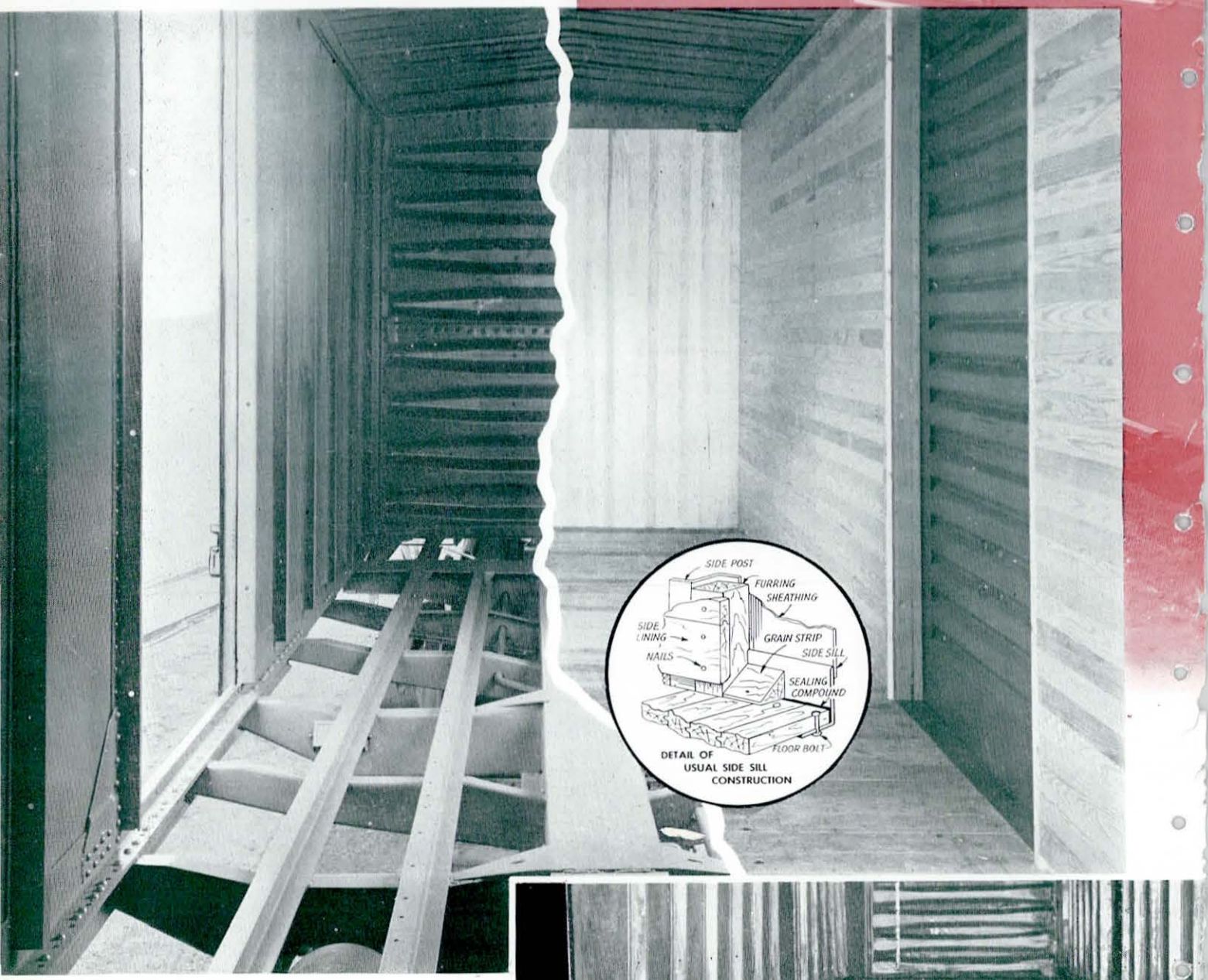
JOHNS-MANVILLE JM PRODUCTS

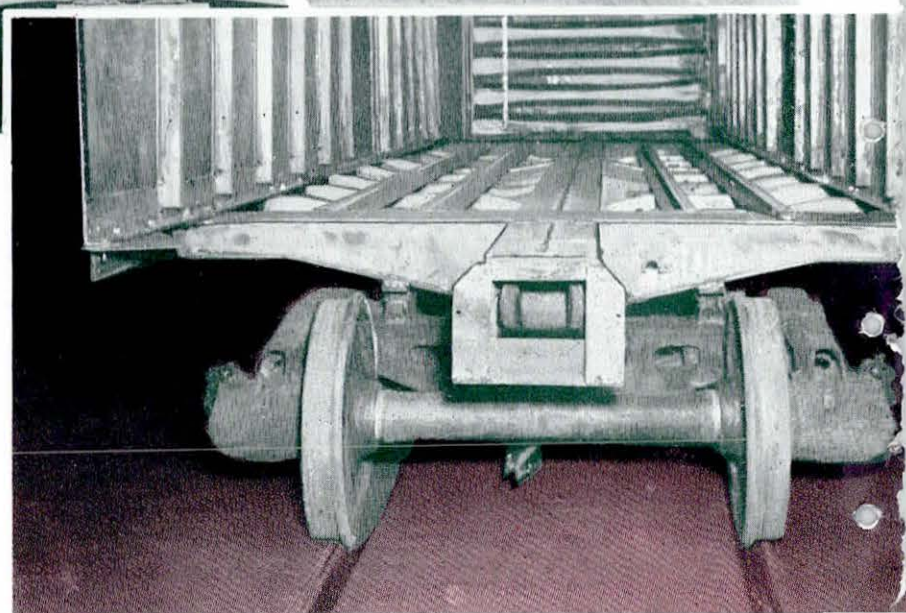
Johns-Manville

90 YEARS OF SERVICE TO TRANSPORTATION

The Common Denominator

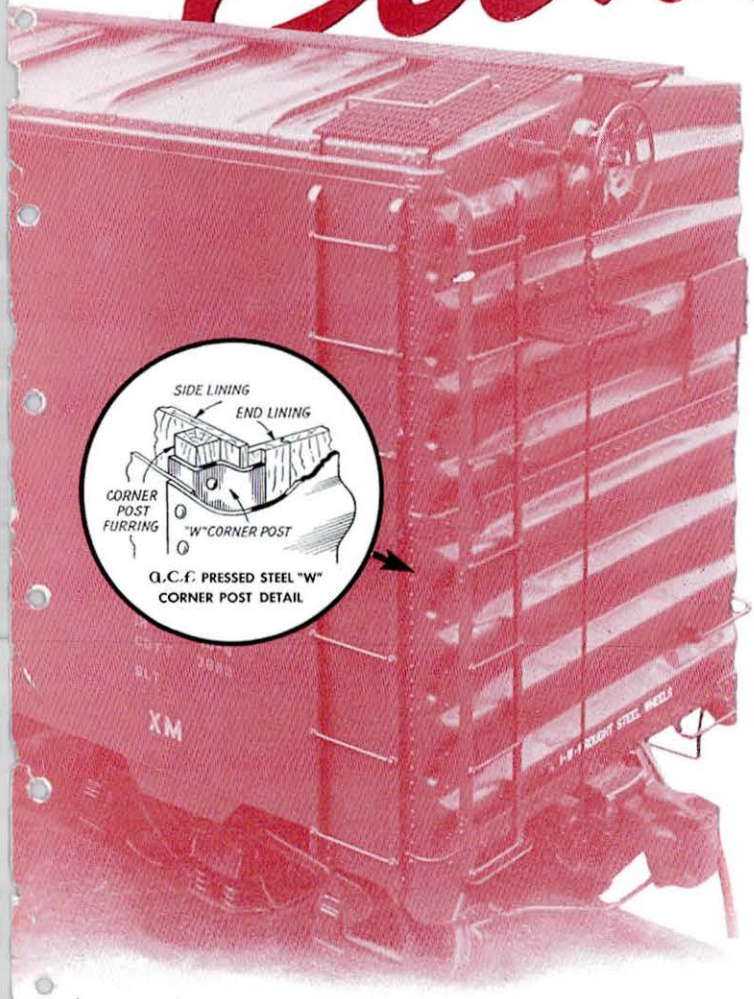


The A.C.F. designed underframe provides continuous bolster-to-bolster stringers to insure level floors. Note also that an *extra* crosstie at the mid-point of the door opening reinforces floor where the concentration of weight in loading comes.



The all-welded A.C.F. center sill, striker plate (forging) and draft lug assemblies represent advanced engineering to be examined in detail. Drawings are available.

of *Economy*



Note the a.c.f. corrugated end—and 10 posts per side instead of the conventional 8. Absolutely tight riveted roof construction. There is much detail worthy of your engineering study.

A purposeful New Box Car program can well be a Railroad's "ace-in-the-hole" for speedier and better freight service. To standardize on a standardized design is an obvious purchase advantage. Cost is in its favor. Earlier deliveries, too. So is simplified standard parts storekeeping. As a.c.f. builds such cars they embody A. A. R. standards *plus*...with extra members, extra reinforcing and extra strength where the strains come. Our representatives will be glad to discuss overall design, and any and all details.

American Car and Foundry Company, New York

Chicago • St. Louis • Cleveland • Philadelphia

Washington • Pittsburgh • San Francisco

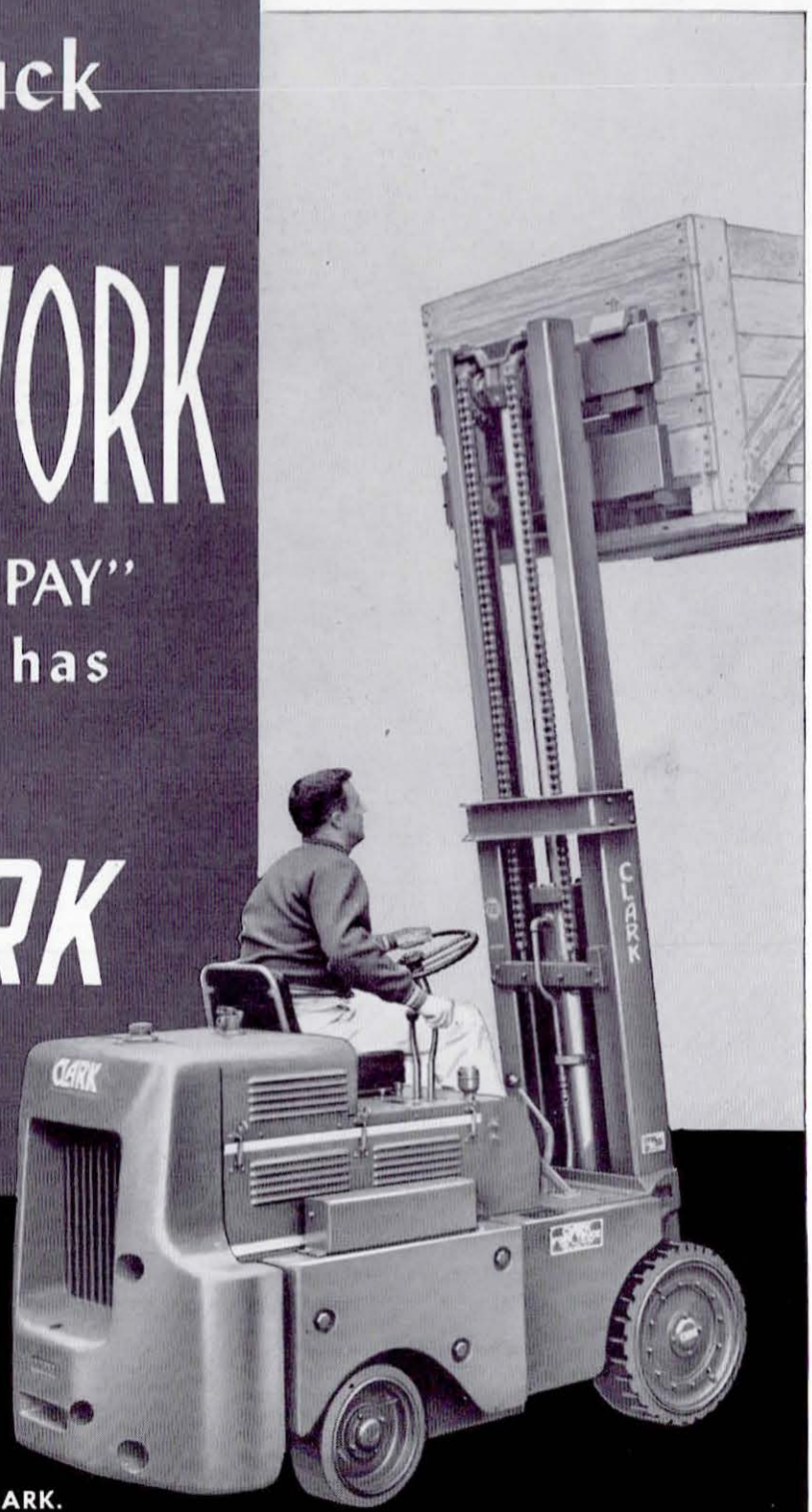
a.c.f.

Standardized

Welded BOX CARS

CAR BUILDERS TO AMERICA'S RAILROADS

This Fork Truck DOES MORE WORK FOR LESS "PAY" because it has DYNA-TORK *Drive*



Available *only* in CLARK'S gasoline-powered Utilitruc, DYNATORK DRIVE eliminates the clutch and conventional transmission. Nothing comparable in the fork-lift-truck field. Benefits so numerous that the important question is: CAN YOU AFFORD TO BE WITHOUT IT?

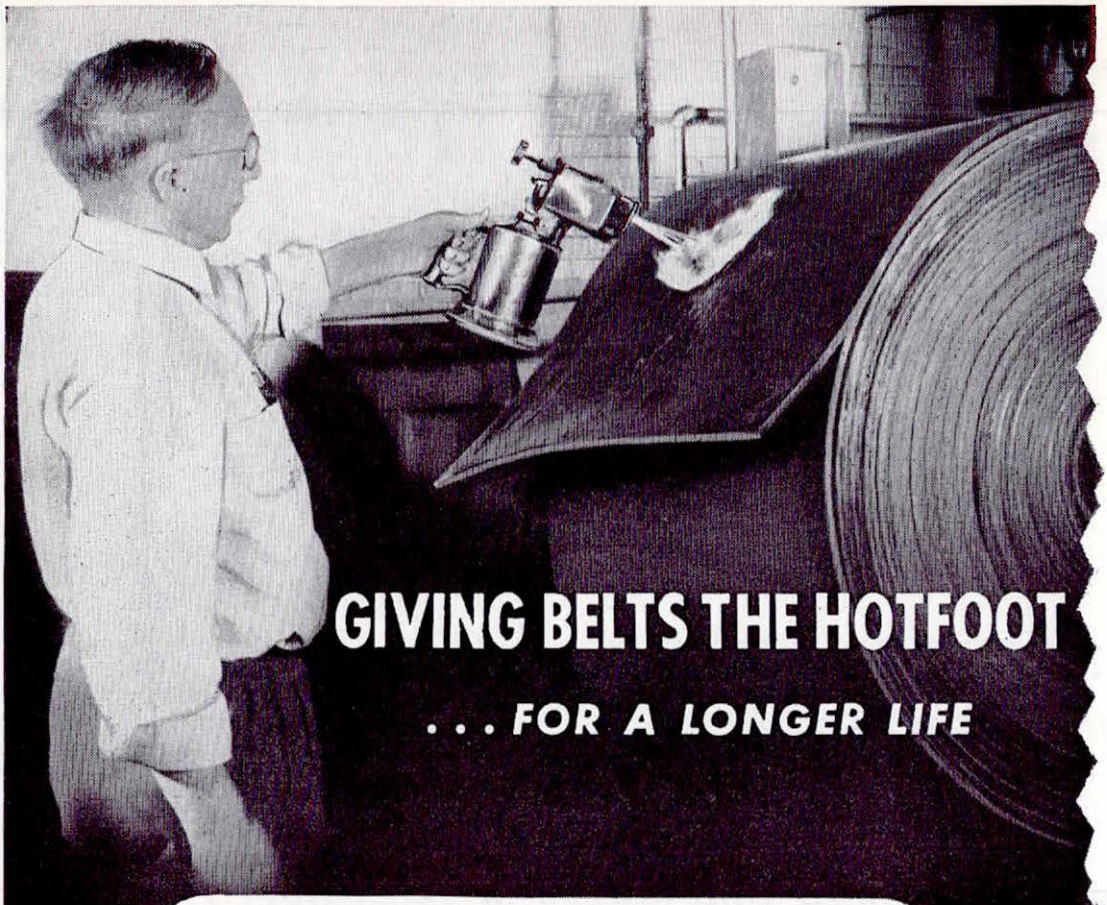
To help get the answer—to enjoy unsurpassed counsel on any materials-handling matters—CONSULT CLARK. Please direct inquiries on your business letterhead to address listed below.

INDUSTRIAL TRUCK DIVISION

CLARK EQUIPMENT COMPANY

BATTLE CREEK 24, MICHIGAN

AUTHORIZED CLARK INDUSTRIAL TRUCK PARTS AND SERVICE STATIONS IN STRATEGIC LOCATIONS



GIVING BELTS THE HOTFOOT

. . . FOR A LONGER LIFE

QUAKER CONVEYOR BELTS PRE-TESTED 18 TIMES TO ASSURE LONG LIFE UNDER MOST SEVERE CONDITIONS

Coal . . . ashes . . . cinders . . . rubbish—some hot, others cold and case histories prove Quaker Belts stand up under the most severe usage. They're pre-tested and torture-tested when they are made to withstand every operating condition.

One of the many tests Quaker Conveyor Belting must go through is shown above. A blowtorch, at high heat, held six inches from the surface of the belt for six minutes. Quaker Belts take it and are ready for more. They're tough, rugged and built for longer wear. They're made for the railway industry to assure less maintenance . . . to save loss of labor in repairs . . . to help your line reduce its cost per mile.

Whatever your need for industrial rubber products there's a Quaker Pre-tested Product for the Railway Industry. Power transmission belting for every type of installation . . . rod and sheet packings . . . and moulded and braided hose. To economize . . . it pays to Quakerize your operations.

HOSE THAT STANDS ABRASION AND WEAR

Whether it is air brake hose, hose for a steam line or just water hose around the "yard," Quaker has the proper type that has been pre-tested to provide maximum service for its particular use.

BELTING FOR MAXIMUM HORSEPOWER

Flat belts or V-Belts, Quaker has the one to fit the drive . . . to transmit maximum horsepower at the lowest operating cost. Each pre-tested for peak efficiency and longer wear in the most severe service.

QUAKER RUBBER CORPORATION

PHILADELPHIA 24, PA. • New York 7 • Cleveland 15 • Chicago 16 • Houston 1
Western Territory
QUAKER PACIFIC RUBBER CO. • San Francisco 10 • Los Angeles 21 • Seattle 4

QUAKER

RUBBER PRODUCTS

QUAKER RUBBER CORPORATION · PHILADELPHIA, PA. · QUALITY SINCE 1885

REG. U. S. PAT. OFF.

Now...Faster, Smoother Freight Traffic with New *Chrysler-Design* Railroad Freight Truck

BALANCED SUSPENSION...absorbs LATERAL as well as VERTICAL shocks...protects both lading and equipment from damage...allows freight to move with the speed and safety of passenger traffic

With the introduction of the new Chrysler Design Railroad Freight Truck, it becomes possible for freight to move faster—with cargo and equipment protected from sway, shock and vibration—for more efficient and more economical freight operation.

Lateral shocks are absorbed by the pendulum action of self-aligning swing hangers.

Vertical shocks are cushioned by long-travel, high-capacity coil springs and smooth acting, precision-built friction snubbers.

Positive side-frame alignment is produced by combined rigidity of plank and hanger assembly.

Shockproof, dependable, safe, this new truck assures low maintenance costs through rugged construction, complete accessibility and quick wheel change.

It has already been placed in operation by leading railroads all over the country.

Investigate fully the advantages offered by this new advance in rail freight transportation. See the exhibit on Ground Floor of Chrysler Salon, Chrysler Building, Lexington Ave. at 42nd St., New York City.

Chrysler-Design Trucks are
Manufactured and Sold by SYMINGTON-GOULD CORPORATION
Licensed under Chrysler Patents

CHRYSLER CORPORATION

PLYMOUTH • DODGE • DE SOTO • CHRYSLER • AMPLEX • AIRTEMP

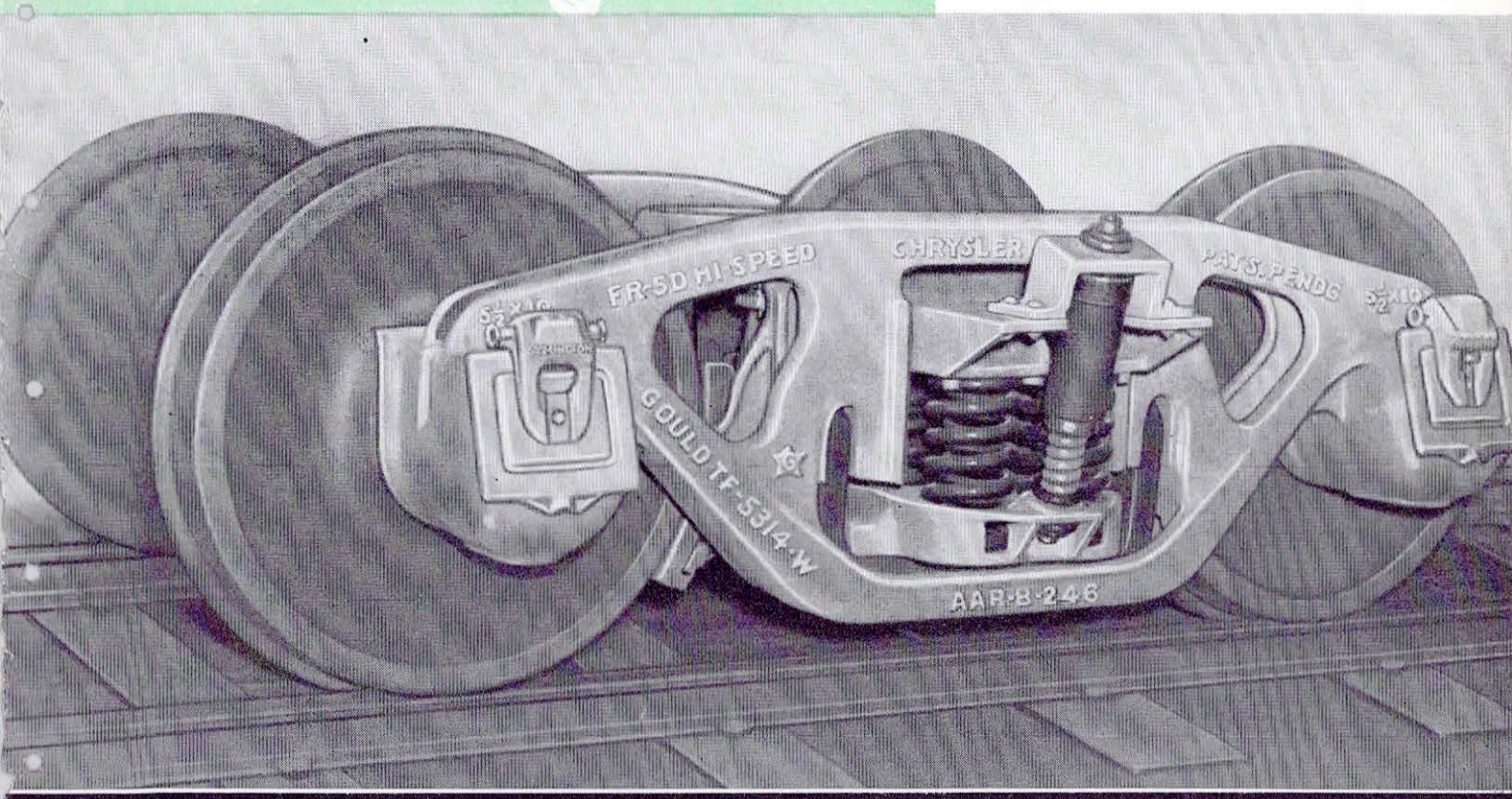
Chrysler-Design Trucks Further Insure

. . . Shock-Proof Car Bodies

. . . Minimum Lading Damage and Maintenance

BY Balanced Suspension

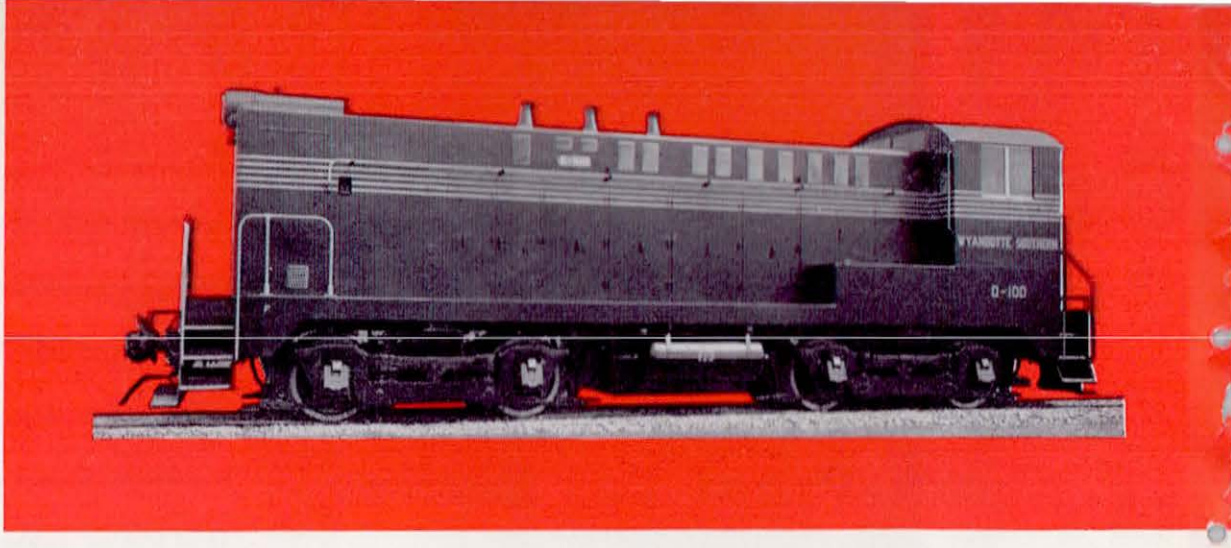
- Lateral shocks absorbed through free action of short swing hanger links of high capacity.
- Vertical shock protection through low rate bolster springs and enclosed, constant friction snubbers with special shoe facing for smooth action and long life.
- Side frames held in square alignment by inherent rigidity of swing hanger and spring plank assembly.



THE SYMINGTON-GOULD CORPORATION

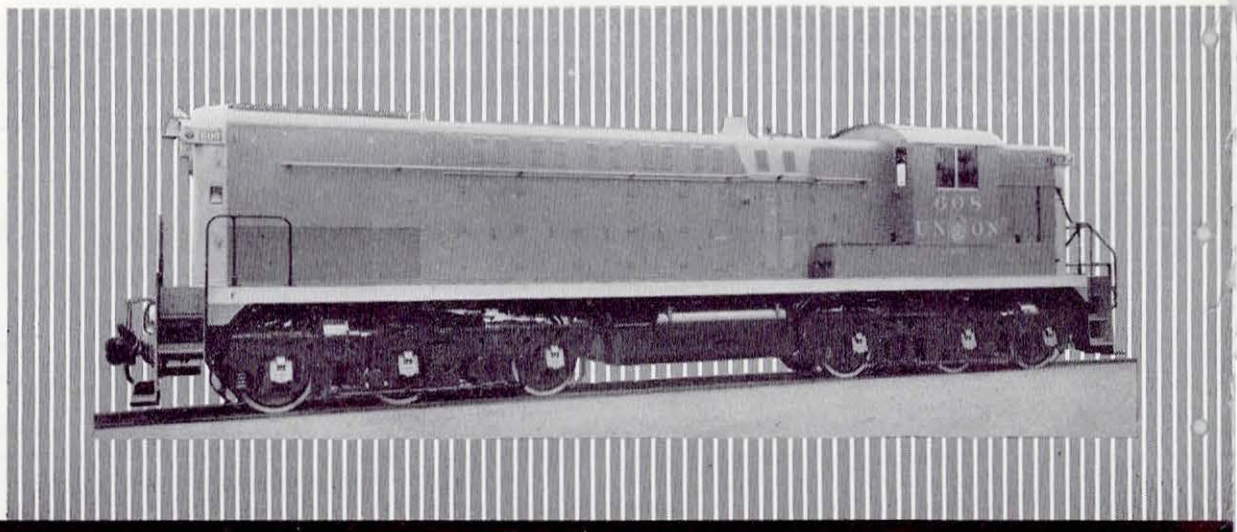
Works: DEPEW, NEW YORK

New York • Chicago • St. Louis • Boston • San Francisco • *In Canada:* ADANAC SUPPLIES, LTD., Montreal, Que.

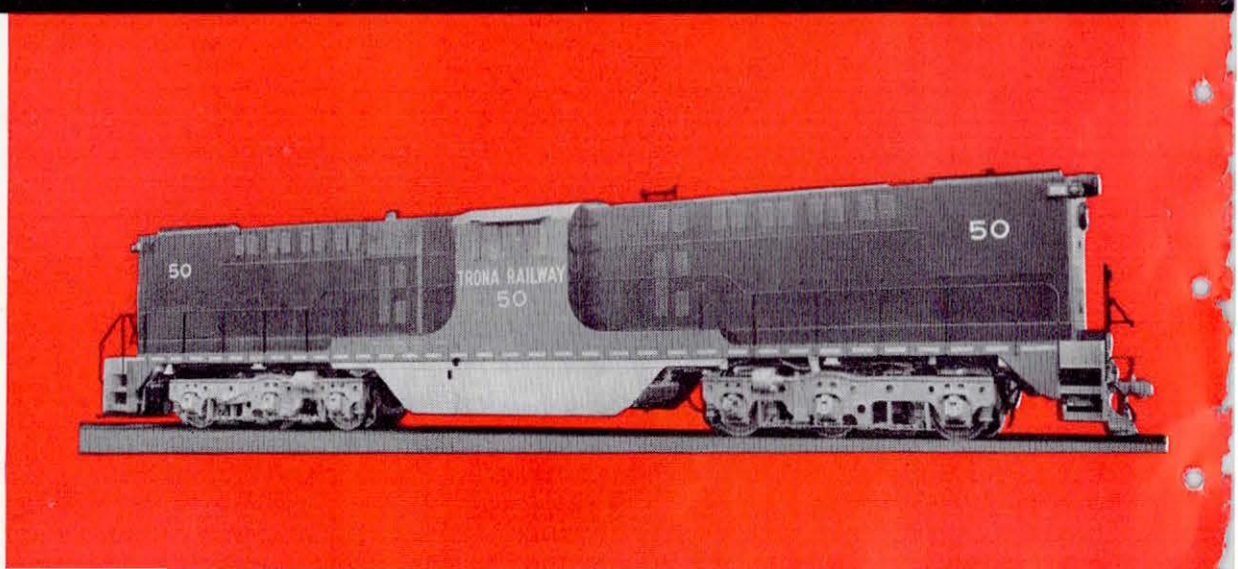


750-hp. diesel-electric switching locomotive powered by one 6-cylinder, 4-cycle, normally aspirated diesel engine.

1000-hp. diesel-electric switching locomotive powered by one 6-cylinder, 4-cycle, turbocharged diesel engine.

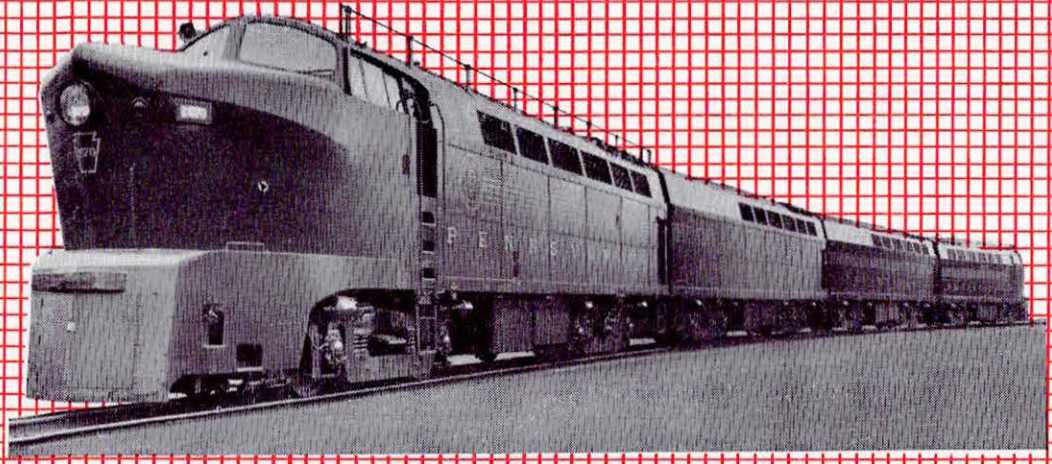


1500-hp. diesel-electric road switcher—one 8-cylinder, 4-cycle, turbocharged diesel engine—6 traction motors.

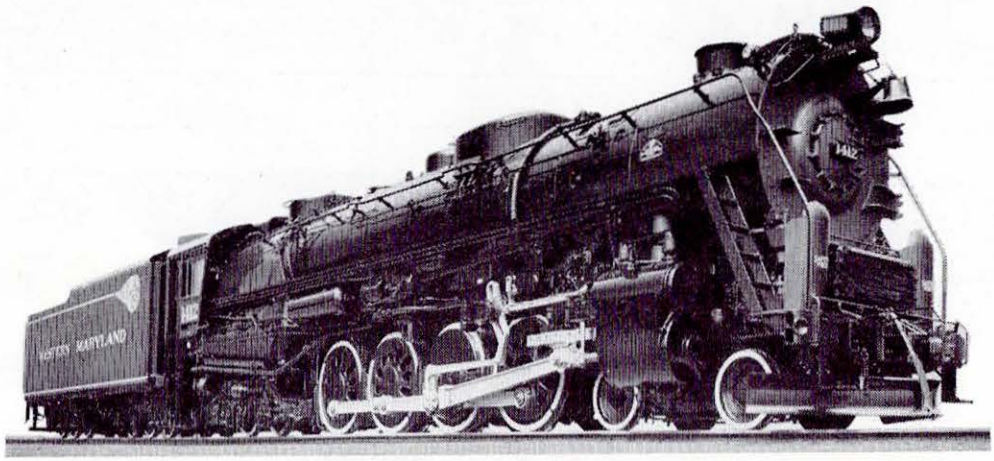


2000-hp. diesel-electric transfer locomotive—two 6-cylinder, 4-cycle, turbocharged diesel engines—6 traction motors.

in the yard or on the main line—your freight problem calls for a Baldwin



6000-hp. diesel-electric freight locomotive.



4-8-2 type steam locomotive for freight service.

To meet today's freight traffic problems with efficiency and economy calls for speedy classification of cars in yards and terminals, and the maintenance of high average speeds with heavy trains on the main line.

Baldwin offers diesel-electric, steam and electric locomotives that can do both these jobs—locomotives backed by long experience in designing and building all types of motive power.

A Baldwin representative would like to discuss your freight traffic problems with you.

BALDWIN PRODUCTS FOR THE RAILROADS

Locomotives of all types, steel tires, rolled steel wheels, axles, connecting rods, springs, boilers, and fireboxes. Hydraulic presses, bending rolls, plate planers, diesel engines, crane wheels, steel and non-ferrous castings and forgings, testing equipment.

BLW THE BALDWIN GROUP

BALDWIN LOCOMOTIVES

The Baldwin Locomotive Works, Philadelphia 42, Pa., U. S. A. Offices: Boston, Chicago, Cleveland, Houston, New York, Philadelphia, Pittsburgh, San Francisco, Seattle, St. Louis, Washington. In Canada: Canadian Locomotive Company, Ltd., Kingston, Ontario.

Pressed Steel Car

70-TON ALL STEEL

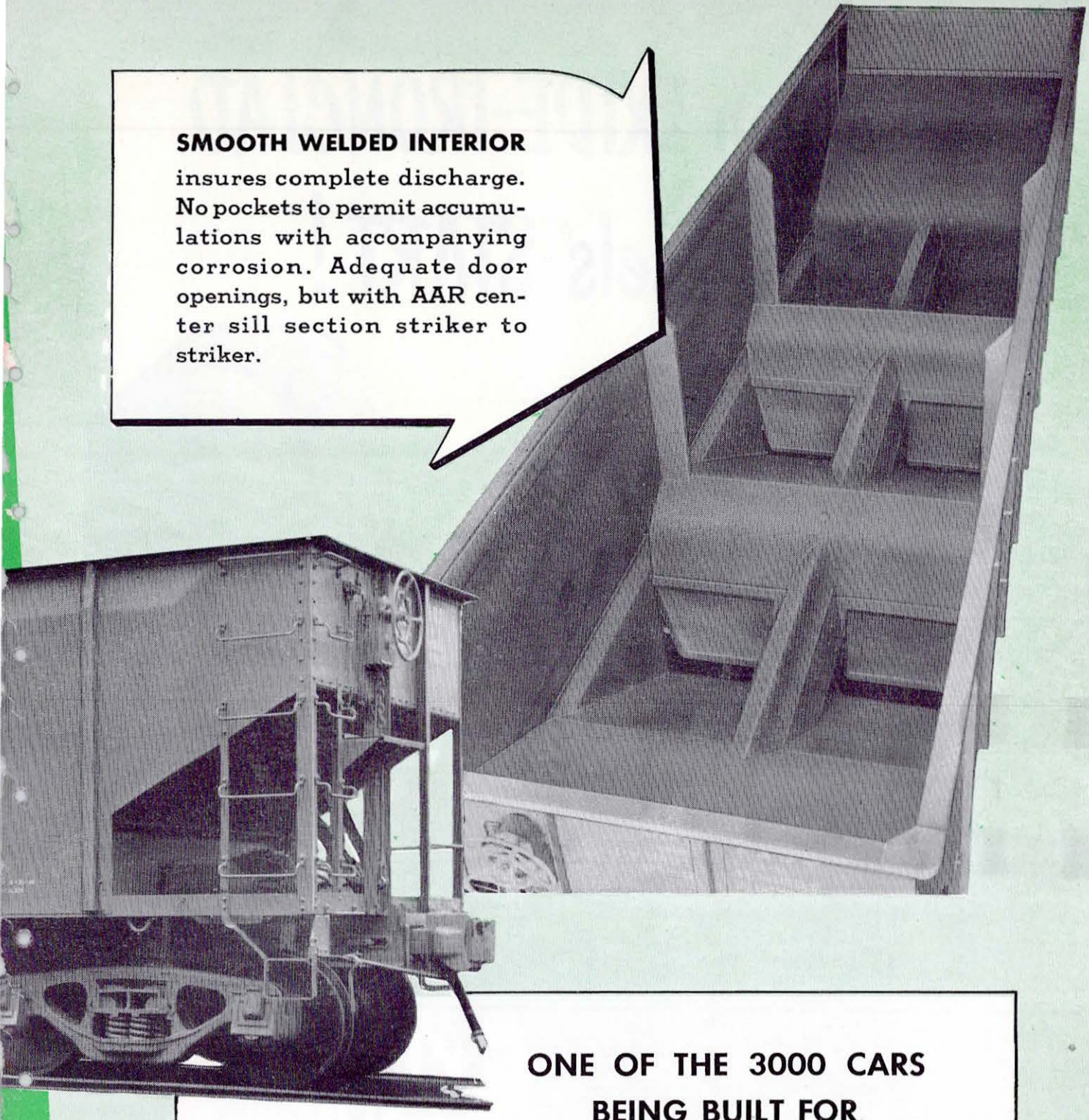
WELDED

Payloader

More Cubic Capacity with less Weight!

The oldest manufacturer of Steel Hopper Cars now offers to the railroads of the United States the newest—70-Ton Pressed Steel Car "Payloader." It is their answer to the railroad's demand for a sturdier, more economical unit. Already in mass production in 70-Ton capacity the "Payloader" will also be produced in the 55-Ton Class.

SMOOTH WELDED INTERIOR insures complete discharge. No pockets to permit accumulations with accompanying corrosion. Adequate door openings, but with AAR center sill section striker to striker.



ONE OF THE 3000 CARS
BEING BUILT FOR
UNION PACIFIC RAILROAD
MISSOURI-KANSAS-TEXAS LINES
NORTHERN PACIFIC RAILWAY

PRESSED STEEL CAR COMPANY, INC.

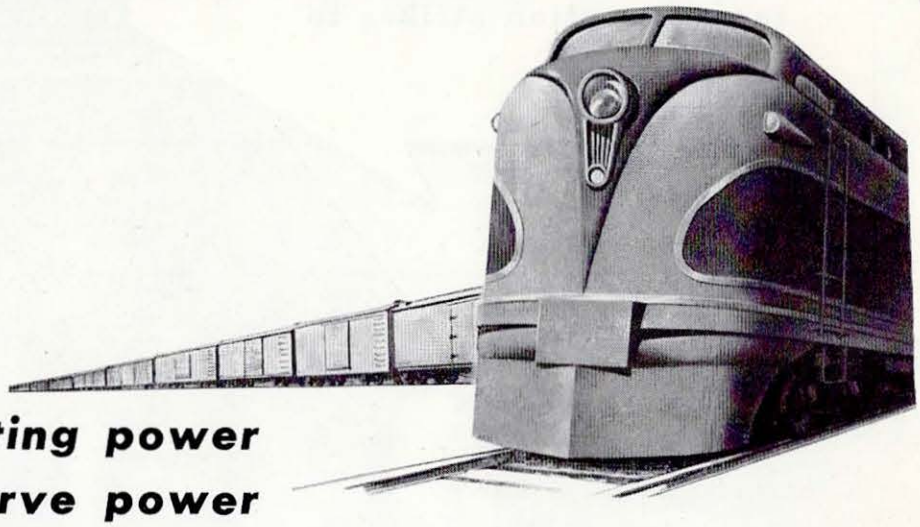
NEW YORK, N. Y. PITTSBURGH, PA. CHICAGO, ILL. MT. VERNON, ILL.

District Offices
230 Park Avenue
New York 17, N. Y.

Executive Offices
Koppers Building
Pittsburgh 30, Pa.

Sales Offices
38 So. Dearborn Street
Chicago 3, Ill.

When it's an EXIDE-IRONCLAD your Diesels START!

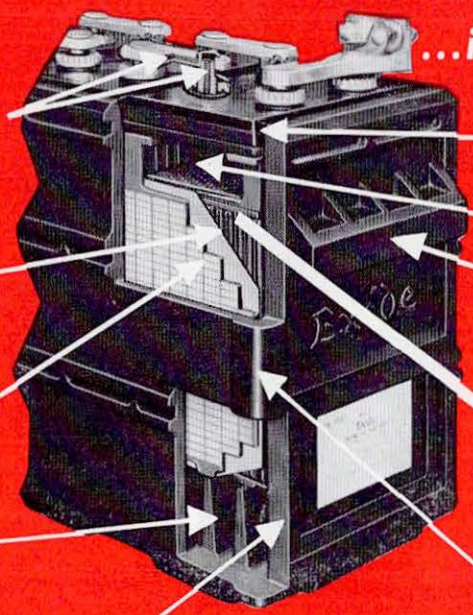


Built specifically for this toughest of cranking jobs . . . Exide-Ironclads have

great starting power
great reserve power
great lasting power

EXIDE-IRONCLAD Batteries are DIFFERENT!

...in CONSTRUCTION...in PERFORMANCE


HEAVY COPPER INSERTS assure high cranking rates and low voltage drop
MICROPOROUS RUBBER SEPARATOR
HEAVY NEGATIVE PLATE
HIGH SUPPORTING RIBS with ample sediment space, making internal cleaning unnecessary
HEAVY END and SIDE WALLS
DEEP SEAL CHANNEL . . . eliminates leakage of electrolyte
HIGH ELECTROLYTE LEVEL . . . less frequent watering
INTEGRALLY MOLDED HANDLES
POSITIVE PLATE
REINFORCED CORNERS

view of section of tube in positive plate

Each of the many exclusive features of Exide-Ironclad Batteries is designed to meet the most exacting service requirements on passenger, freight, switching and industrial locomotives.

One notable difference between Exide-Ironclads and all other batteries, is the unique positive plate which consists of a series of slotted tubes containing the active material. So fine are these slots that, while permitting easy access of the electrolyte, they retard the active material from readily washing out or jarring loose . . . adding considerably to life of the battery.

Negative plates and separators are built to match the long life of the positive plate. Heavy copper inserts in terminal posts and inter-cell connectors assure high cranking rates and low voltage drop. New molded container assembly . . . with the rugged reinforcing bands, heavy end and side walls, support skids and reinforced corners . . . is built to withstand severest hardships.

EXIDE-IRONCLAD Batteries have all 4 essential characteristics that a storage battery must have to assure maximum performance in Diesel locomotive cranking . . . high power ability . . . high electrical efficiency . . . ruggedness . . . long life with minimum maintenance.

The combination of these four Exide-Ironclad characteristics assures years of dependable, day-in, day-out service with economy.

DEPENDABLE POWER

Exide

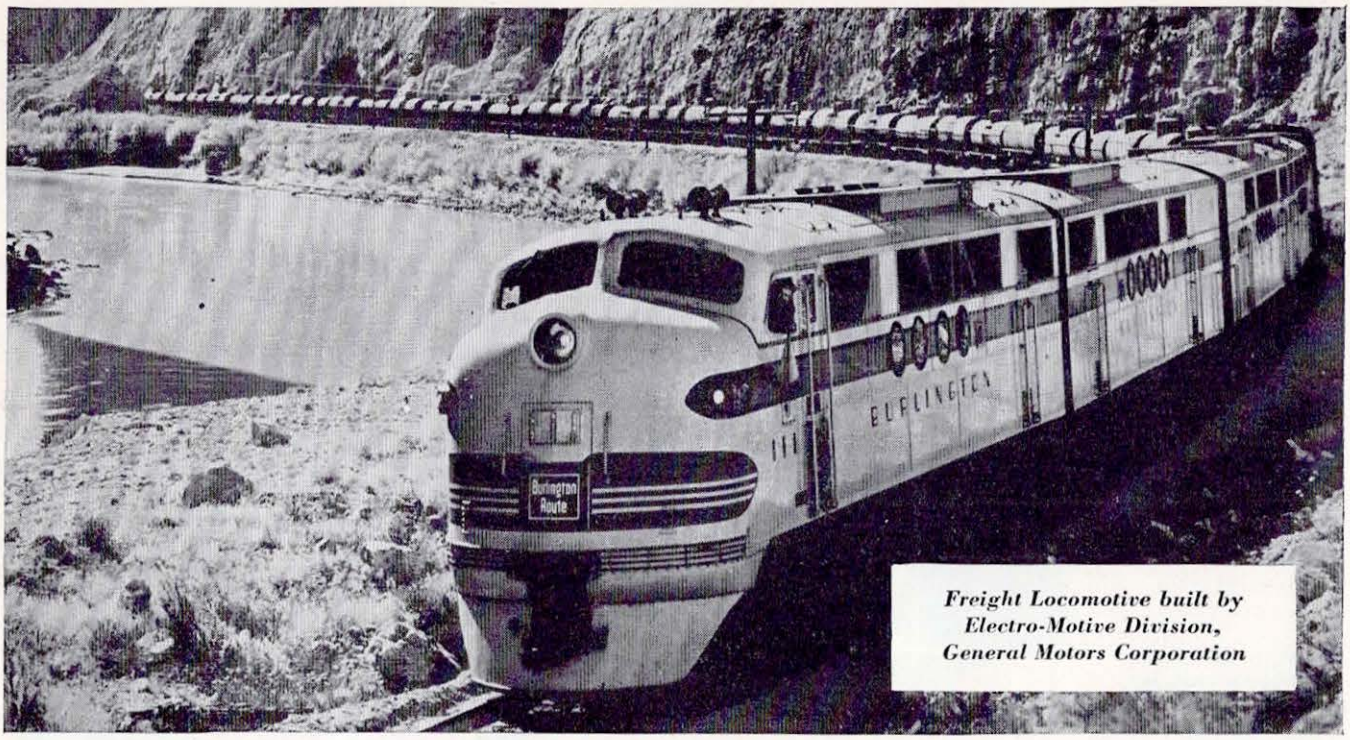
IRONCLAD BATTERIES

1888 — Dependable Batteries for 61 Years — 1949

"Exide-Ironclad" *Reg. Trade-mark U. S. Pat. Off.*

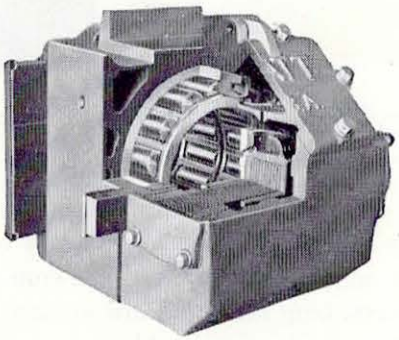
THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32

Exide Batteries of Canada, Limited, Toronto

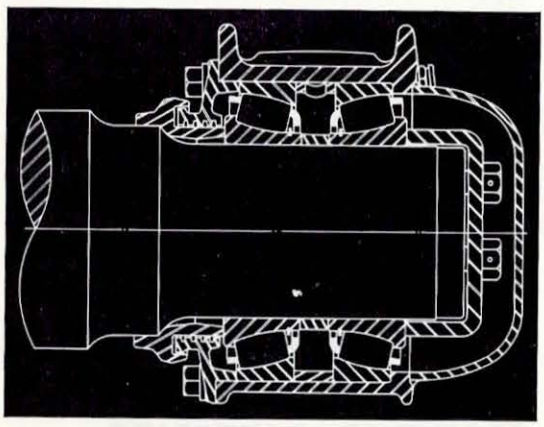


Freight Locomotive built by Electro-Motive Division, General Motors Corporation

Freight Progress—Diesels—and HYATTS



Hyatt GM Diesel Locomotive Journal Box



Hyatt Freight Car Journal Box

Diesel Locomotives have contributed greatly to the progress made by American Railroads in swift, economical, freight movement. Hyatt roller bearing journal boxes and traction motor bearings have been active partners in this development.

There is a very definite trend toward the more widespread use of modern roller bearing freight cars that can be freely interchanged among all carrier systems.

Hyatt developments in the freight car field over the past twenty years will be just as enthusiastically received as our present series of locomotive and passenger car journal boxes.

Hyatt Bearings Division, General Motors Corporation, Harrison, N. J.

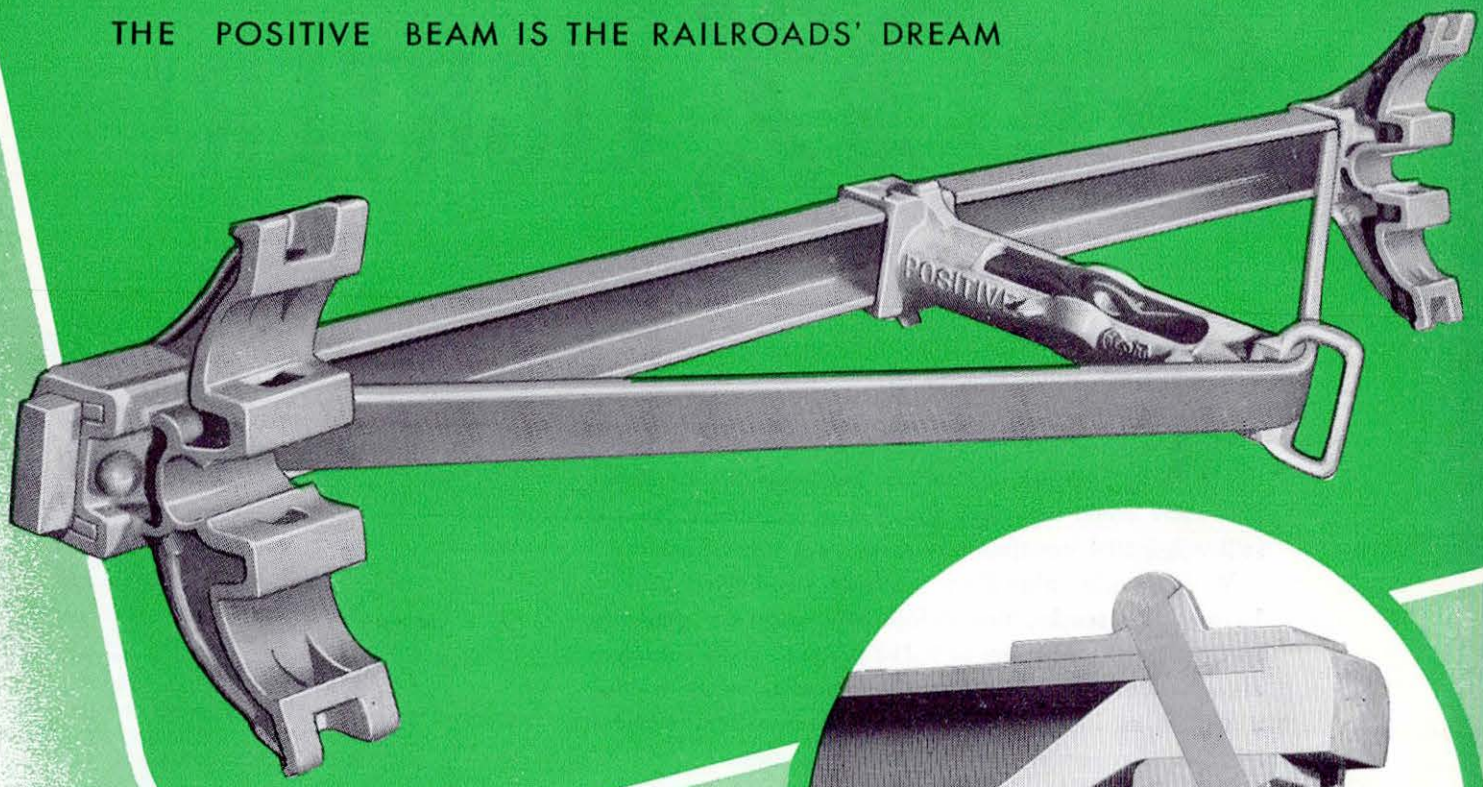
HYATT ROLLER BEARING JOURNAL BOXES

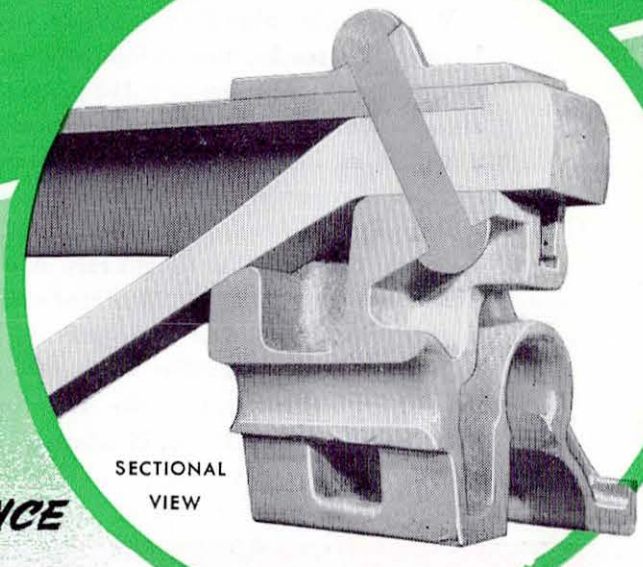
POSITIVE
TRADE MARK

BRAKE BEAM

SAVES IN REPAIRS

THE POSITIVE BEAM IS THE RAILROADS' DREAM





SECTIONAL VIEW

SUPERIOR IN DESIGN
RELIABLE IN PERFORMANCE

In service or on order from 63 railroads and private car lines

CHICAGO RAILWAY EQUIPMENT CO.
McCormick Building, Chicago

How to make a box car

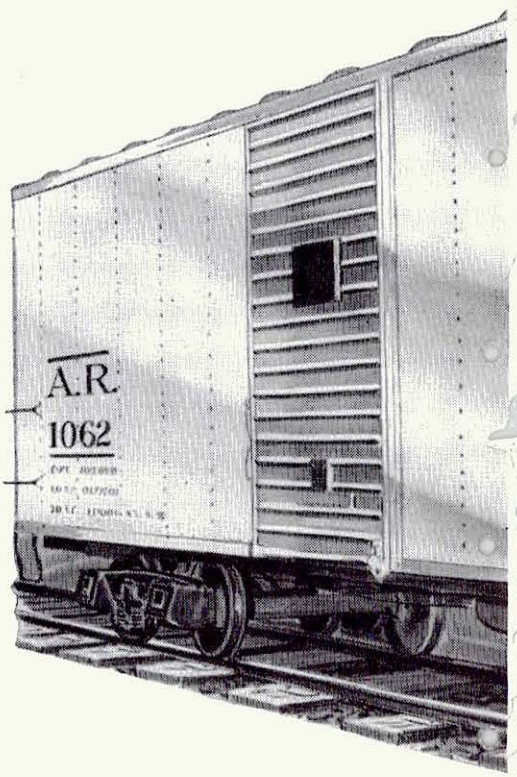
25% LONGER...AND 20% LIGHTER!

You can work wonders with Alcoa Aluminum in freight car construction.

For instance, why not take advantage of aluminum's lightness by building box cars 10 feet longer . . . and get 25% more cubic capacity? The longer aluminum car will still weigh 20% less than a conventional 40-foot car!

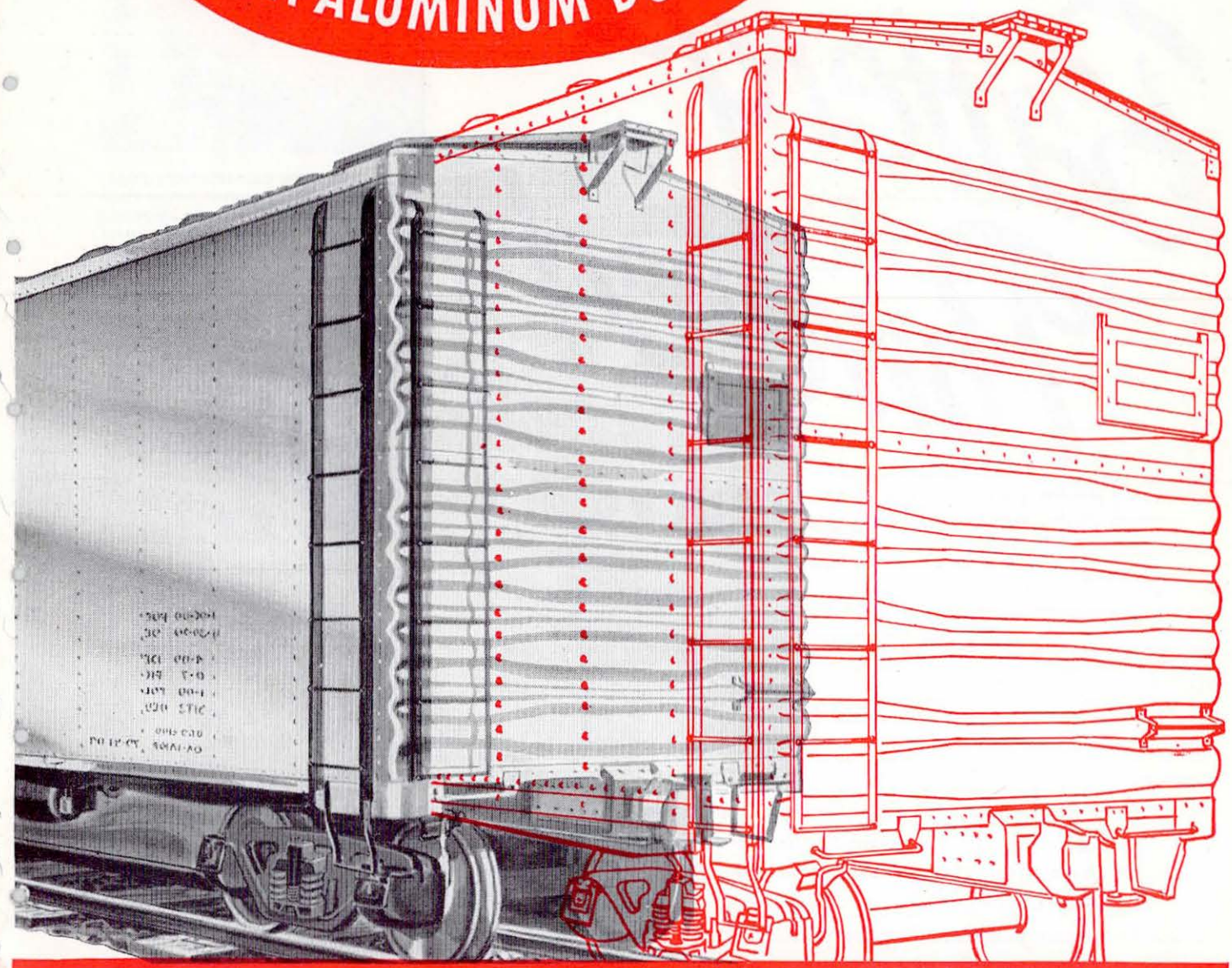
Without using aluminum in center sill, bolsters, cross-bearers and trucks, the 50-foot aluminum car provides an actual weight saving of 9,440 pounds. With complete aluminum underframe and some aluminum in the trucks, a weight saving of nearly 6 tons is possible, without sacrifice of ruggedness or thickness of section.

Investigate the higher ton-mile revenue and reduced upkeep you can gain with freight cars of corrosion-resistant Alcoa Aluminum. They are fabricated with standard equipment and methods. Our engineers will be glad to work with your car shop or builder. Call your nearby Alcoa Sales Office for information. Or write ALUMINUM COMPANY OF AMERICA, 2178 Gulf Bldg., Pittsburgh 19, Pennsylvania.



ALCOA FIRST IN ALUMINUM

INGOT • SHEET & PLATE • SHAPES, ROLLED & EXTRUDED • WIRE • ROD • BAR • TUBING • PIPE • SAND, DIE & PERMANENT-MOLD CASTINGS • FORGINGS • IMPACT EXTRUSIONS



..THE METAL THAT *LASTS*

ALCOA
ALUMINUM

ELECTRICAL CONDUCTORS • SCREW MACHINE PRODUCTS • FABRICATED PRODUCTS • FASTENERS • FOIL • ALUMINUM PIGMENTS • MAGNESIUM PRODUCTS

No matter which advantage...

YOU'LL FIND THEM ALL IN

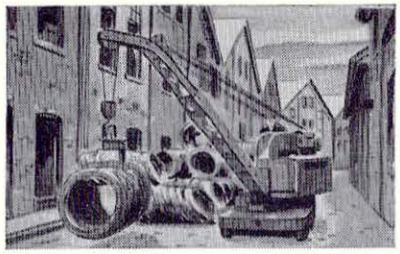
Battery-Powered

INDUSTRIAL TRUCKS

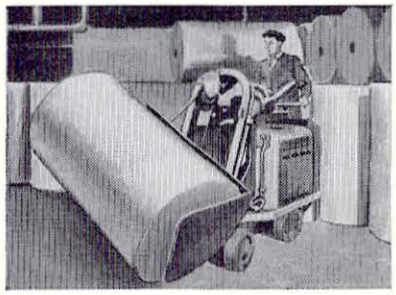
For handling costs that *stay* lowest, there's nothing to beat unit loads *and battery-powered industrial trucks.* From power-source through every detail of construction, electric trucks are specifically designed to give you unit-load handling dependably, efficiently, safely—*at lowest cost per ton handled.*

These lower costs are being realized in handling and distribution *throughout whole industries.* Both you and your supplier profit, for instance, when you specify unit-load packing. You save again through unit-load handling in your own operations. Then you and your consignee profit when you ship in unit loads.

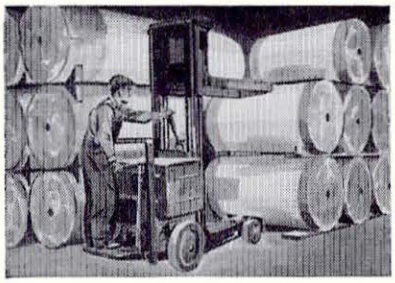
Put this new formula to work cutting costs for you—specify unit loads *to* your plant . . . *in* your plant . . . *from* your plant. And for greatest efficiency in your own industrial trucking, specify battery power.



MAXIMUM DEPENDABILITY — A metal refiner says, "Business was increasing; we had to have a method of material handling on which we could rely. We investigated . . . and switched to battery power."



LONG LIFE—LOW DEPRECIATION COST. This veteran has handled better than 1¼ million tons of paper in 20 years. (Over 90% of the electric trucks sold in that period are still in constant service.)



LOW OPERATING COST — Battery-powered truck operated by a newspaper publisher, 49 hours per week, costs "a little less than $5 a week . . . for power, battery costs, parts, grease and oil," says the owner.

SAFETY, CLEANLINESS — For the handling of inflammable raw cotton and the chemicals used in treating his finished products, a surgical dressing manufacturer finds that "electric trucks are ideal." No fire hazard, no product contamination.

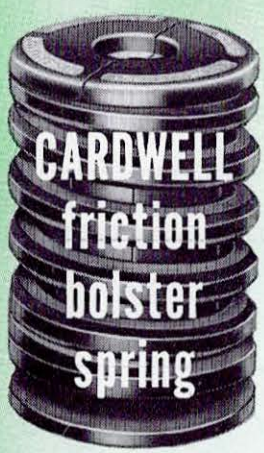
THE ELECTRIC INDUSTRIAL TRUCK ASSOCIATION

29-28R FORTY-FIRST AVENUE, QUEENS PLAZA, LONG ISLAND CITY 1, N. Y.

ROLLING STOCK & LADING *DESERVE* THIS

MAXIMUM PROTECTION

Against Excess Horizontal, Vertical, Lateral and Angular Shocks and Forces



For A. A. R. and Long Travel Springs

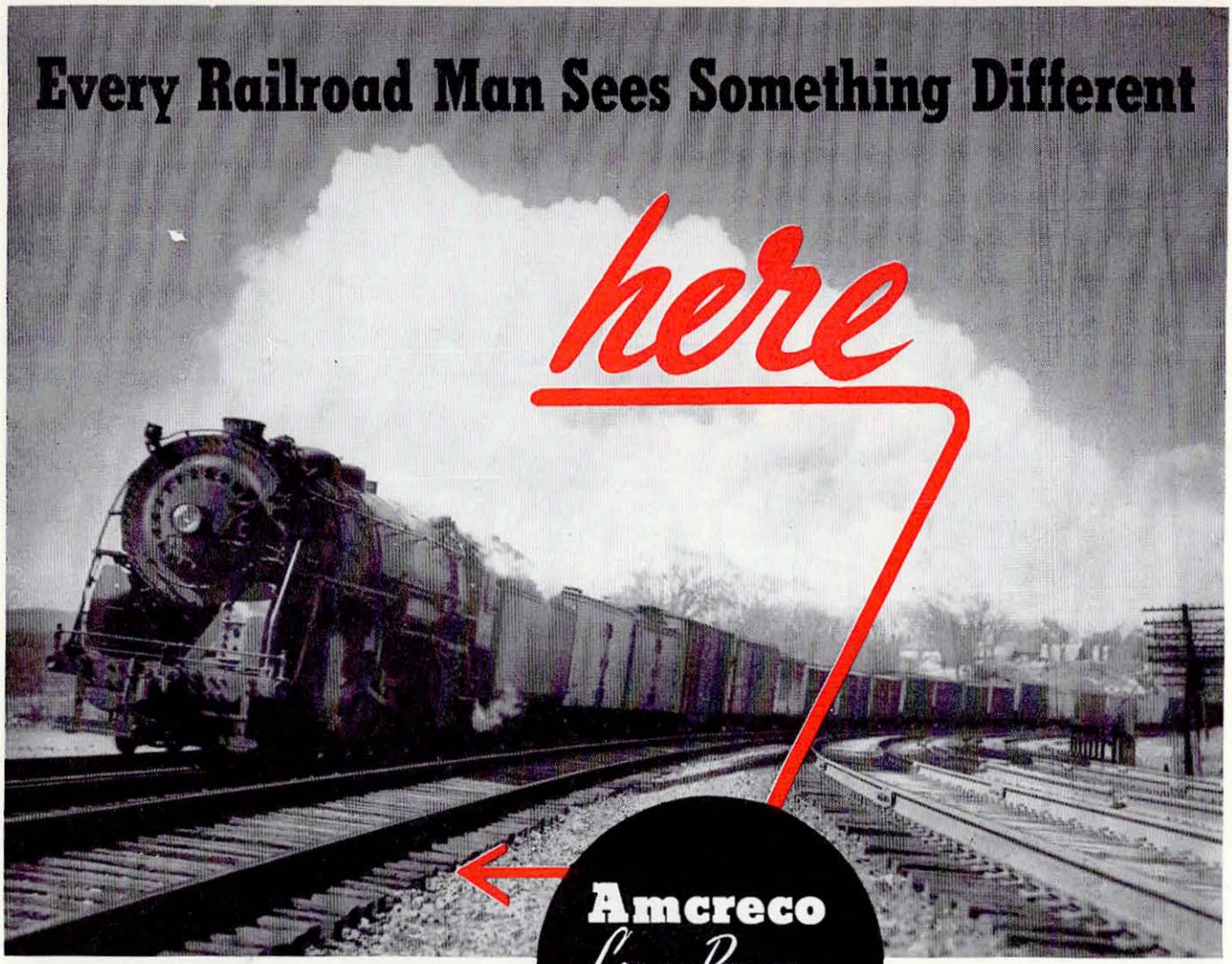
Over 98% of the Cars in Freight Carrying Service are A.A.R. Construction, and Over 96% have Friction Draft Gears.

Many Years of Proven Quality

Cardwell Westinghouse Co., Chicago
Canadian Cardwell Co., Ltd., Montreal

G-3179

Every Railroad Man Sees Something Different



- One sees the great load-carrying capacity that makes possible high speed freight movement.
- One sees a sound, safe roadbed that stands up under pounding impact, shock and vibration.
- Another sees lowered maintenance costs and fewer traffic slowdowns for maintenance crews.

They all see the *economically* sound method of expediting traffic and cutting maintenance costs, because they know by experience that Amcreco Pressure Treated Cross Ties make roadbeds strong and enduring to take the beating of modern high speed operations. Carefully selected to assure lasting strength, Amcreco Cross Ties give longer service life, year after year. They are simple to install, require fewer replacements and minimum maintenance. Always specify Amcreco for better service and all-around economy.

ADZED AND BORED
CROSS TIES
BRIDGE TIES
PILES
TIMBERS

Pressure treated for strength that lasts

AMERICAN CREOSOTING COMPANY
INCORPORATED

COLONIAL CREOSOTING COMPANY INCORPORATED

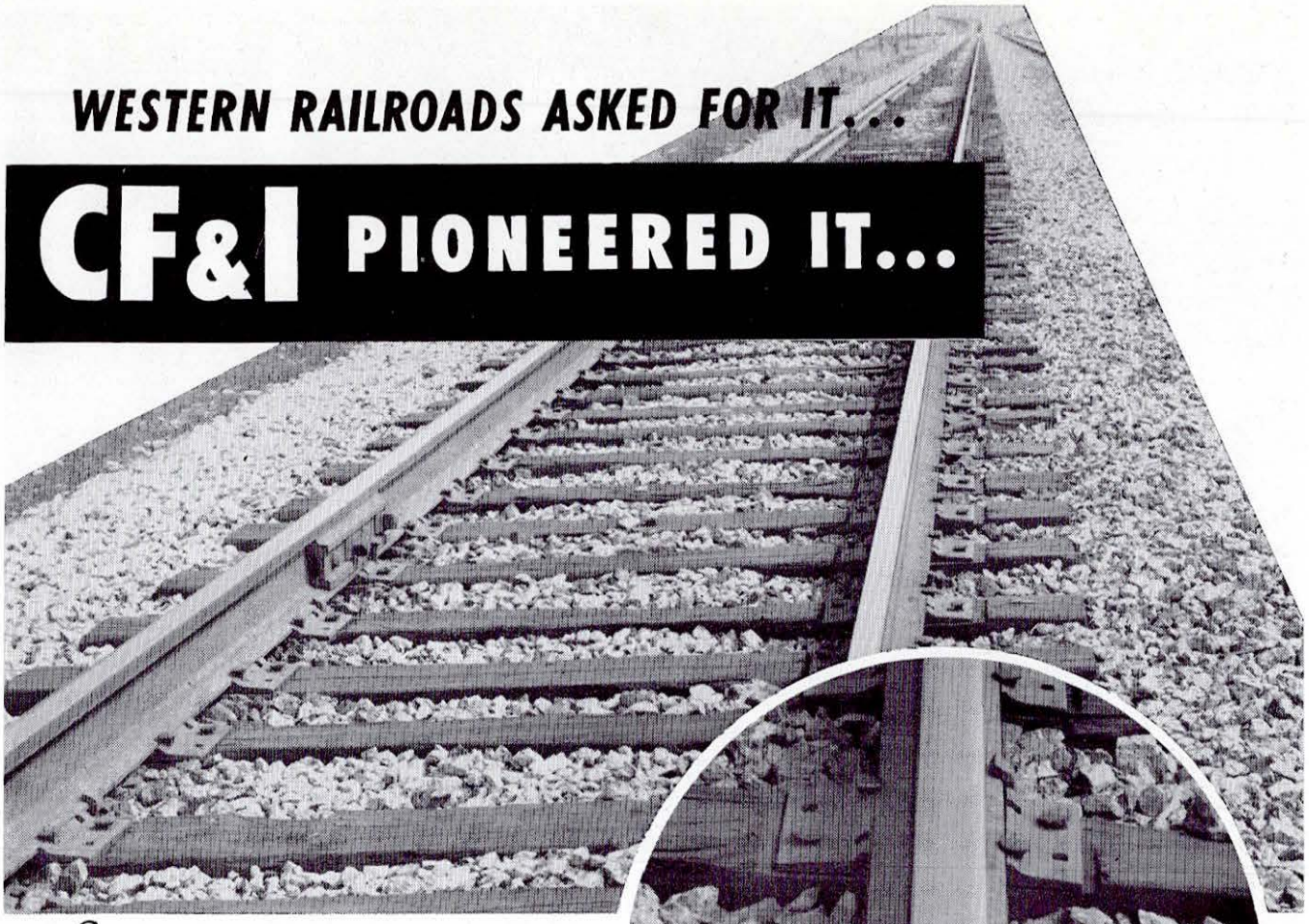
AMCREO LOWRY PROCESS CREOSOTED WOOD

GEORGIA CREOSOTING COMPANY INCORPORATED

LOUISVILLE, KENTUCKY

WESTERN RAILROADS ASKED FOR IT...

CF&I PIONEERED IT...



Seven years ago one of CF&I's good customers, in their determination to prolong tie life and improve track structure, specified new standard 13″ and 14″ tie plates, now identified as American Railway Engineering Association Plans 7 and 8.

CF&I, among other manufacturers, was asked to produce these sections. Those were war times. Presses sturdy enough to punch and shear such heavy ties plates were not then available. Always ready and anxious to cooperate with its customers, CF&I built *in its own shops* the heavy presses, handling equipment, and furnaces necessary to produce this important track accessory.

CF&I thus pioneered—and was first to make heavy plates available to western roads. Their economical advantage and improvement to high speed tracks were soon recognized, as evidenced by their now general adoption as standard.

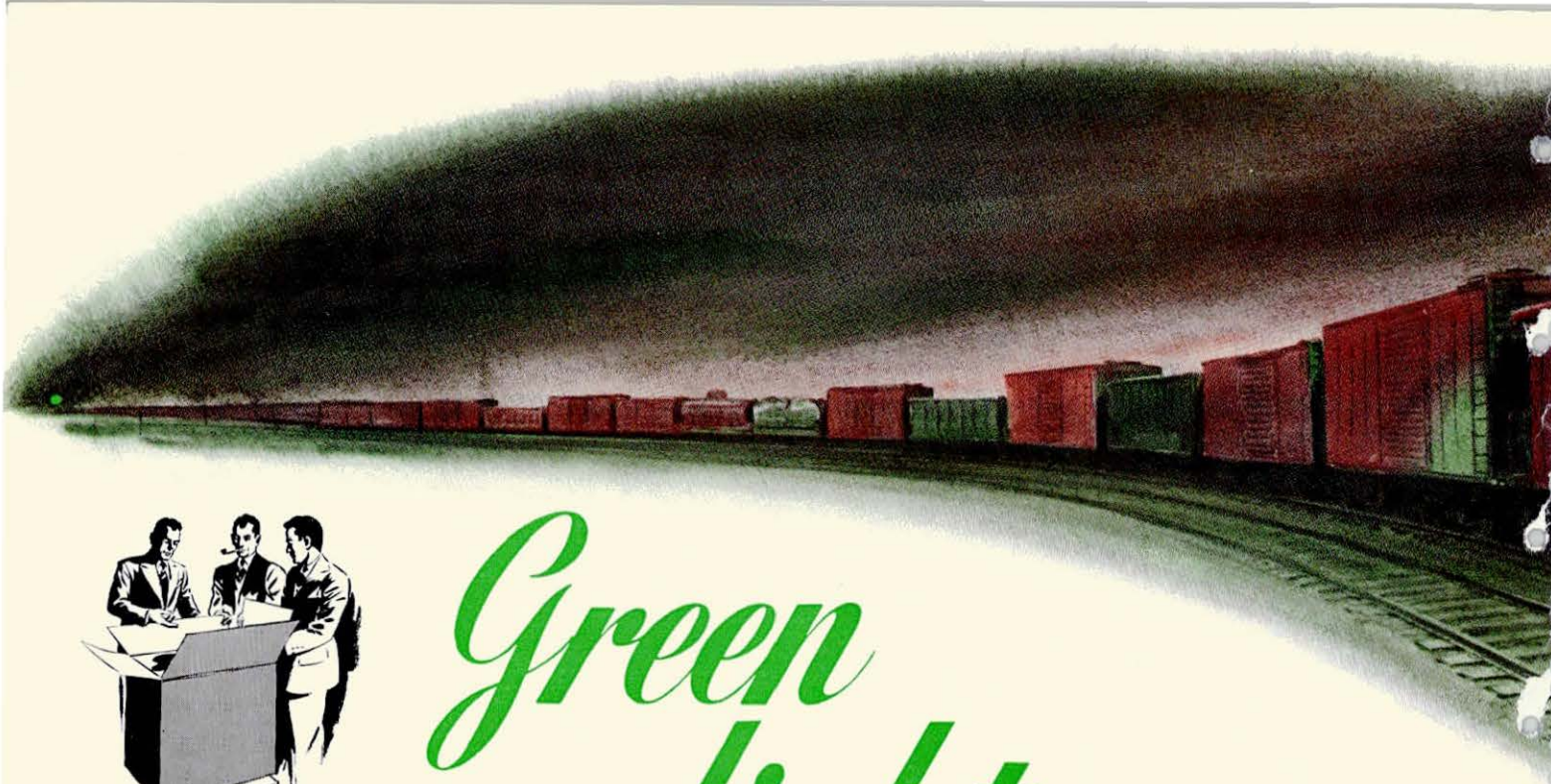
CF&I, pioneer producer of rails for "Western Trails" since 1882, again developed for its valued customers another quality product.

CF&I TIE PLATES MEET ALL A. R. E. A. SPECIFICATIONS

CF&I

The Colorado Fuel and Iron Corporation

GENERAL OFFICES: DENVER, COLORADO



PACKAGE ENGINEERING
Railroads employ packaging experts to advise shippers.

MECHANICAL HANDLING
Widespread use of pallets and fork loaders reduces handling and damage claims.

LOAD RETAINERS and built-in bulkheads in cars provide greater lading protection.

Green lights for lading

NEVER in their history have railroads been more active in lading damage prevention. Their achievements are notable yet ever-rising claims and the proportion of unlocated damage (52.4%, 1948) suggests that there is still much to be done.

One leading railroad, using ride recorders, found certain cars subject to repeated over-solid blows and in each case worn, weakened or defective draft gears were the cause.

Cars equipped with Waughmat Twin Cushions have been found to provide exceptional lading protection.

Whereas conventional draft gears close at 3 to 4 miles per hour, *Twin Cushions* cushion cars at impact speeds well above safe speeds with conventional draft gears.

Twin Cushions have no solid point. Tests and operating experience show that they will provide extraordinary protection against the great majority of impacts encountered in any well regulated yard.

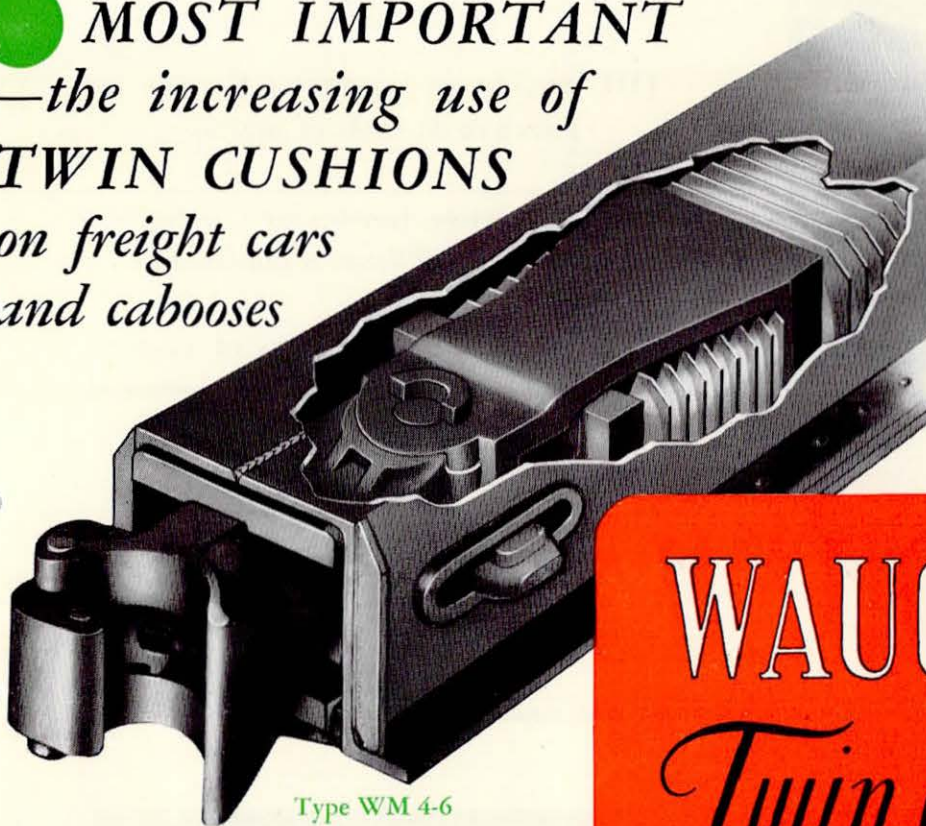
A.A.R. EDUCATIONAL PROGRAM

Advises shippers and freight handlers of lading protection methods.

MOVIES

employed on many railroads, show car and freight handling.

MOST IMPORTANT
—the increasing use of
TWIN CUSHIONS
on freight cars and cabooses



Type WM 4-6

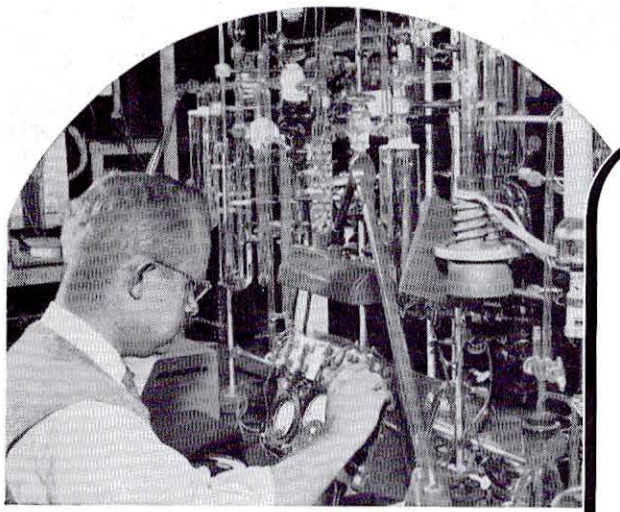
SYMBOL TRAINS,

especially equipped with high speed trucks and Twin Cushions show marked reduction in lading damage.

WAUGH EQUIPMENT COMPANY
New York · Chicago · St. Louis · San Francisco
Canadian Waugh Equipment Company
Montreal

WAUGHMAT *Twin Cushions**

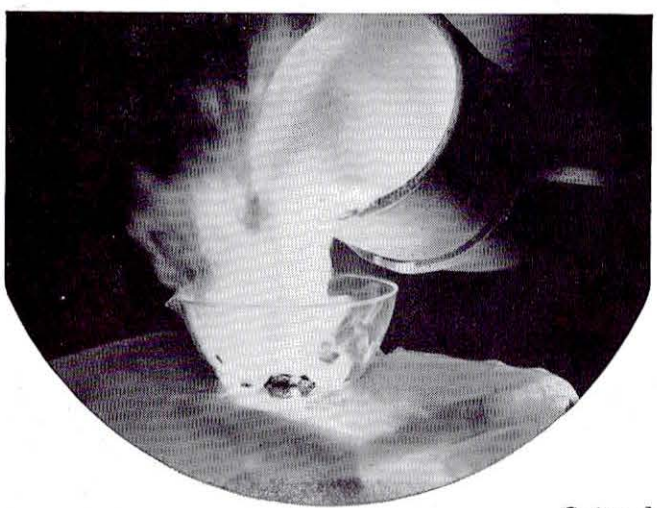
* TRADE MARK REGISTERED

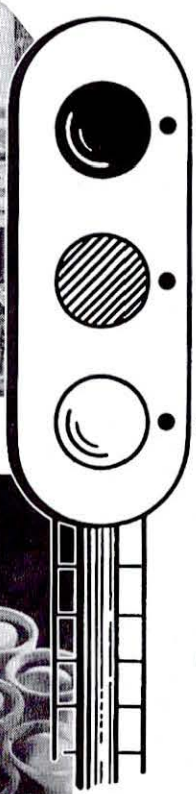


Corning's Research Laboratory for development and improvement of glass.

Thousands of glass formulae available to meet specific needs.

One of the many special glasses of Corning Glass Works developed for extreme changes in temperature.





what you get with Corning Signalware

THE cumulative benefits of Corning research in *all* fields of optics.

THE cumulative benefits of Corning research in *all* fields of illumination.

THE cumulative benefits of Corning research in *all* fields of technical glass production.

This combination of experience and facilities gives you the best signalware available at any time!

Safety depends on signal glassware—Railroads can depend on Corning.

CORNING means research in GLASS

T.M. REG. PYREX U.S. PAT. OFF.

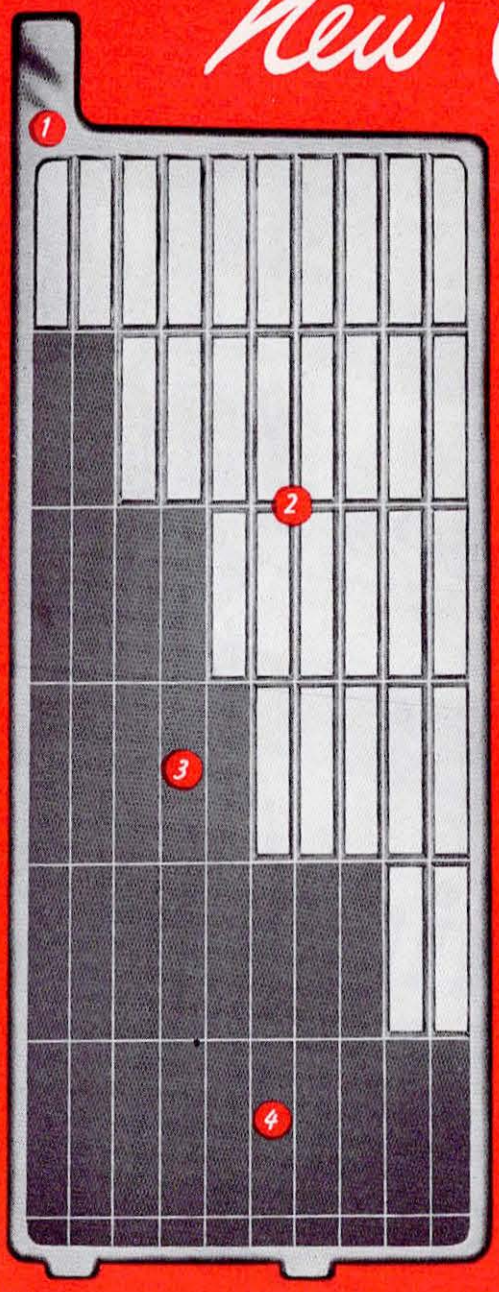
CORNING GLASS WORKS • CORNING, N. Y.

SALES OFFICES: NEW YORK • CHICAGO • SAN FRANCISCO

RAILROAD GLASSWARE

TECHNICAL PRODUCTS DIVISION: SIGNALWARE • LABORATORY GLASSWARE • GLASS PIPE • GAUGE GLASSES • LIGHTINGWARE • OPTICAL GLASS • GLASS COMPONENTS

New GOULD "Z" Plate



REVOLUTIONIZES BATTERY DESIGN!

Only GOULD Has It!

A revolutionary new plate design greatly improves battery performance. The new Gould "Z" Plate means that Gould batteries stay new longer! Here's why:

1. Solid, non-porous positive grid.
2. All grid members are heavy with same cross section.
3. Regenerative oxide renews itself throughout battery service.
4. More active material per battery pound.

Brand new from Gould's modern laboratories and pilot plant. Available shortly in all "Thirty" and "Kathanode" types. Ask for literature on how Gould's new casting techniques improve battery performance.

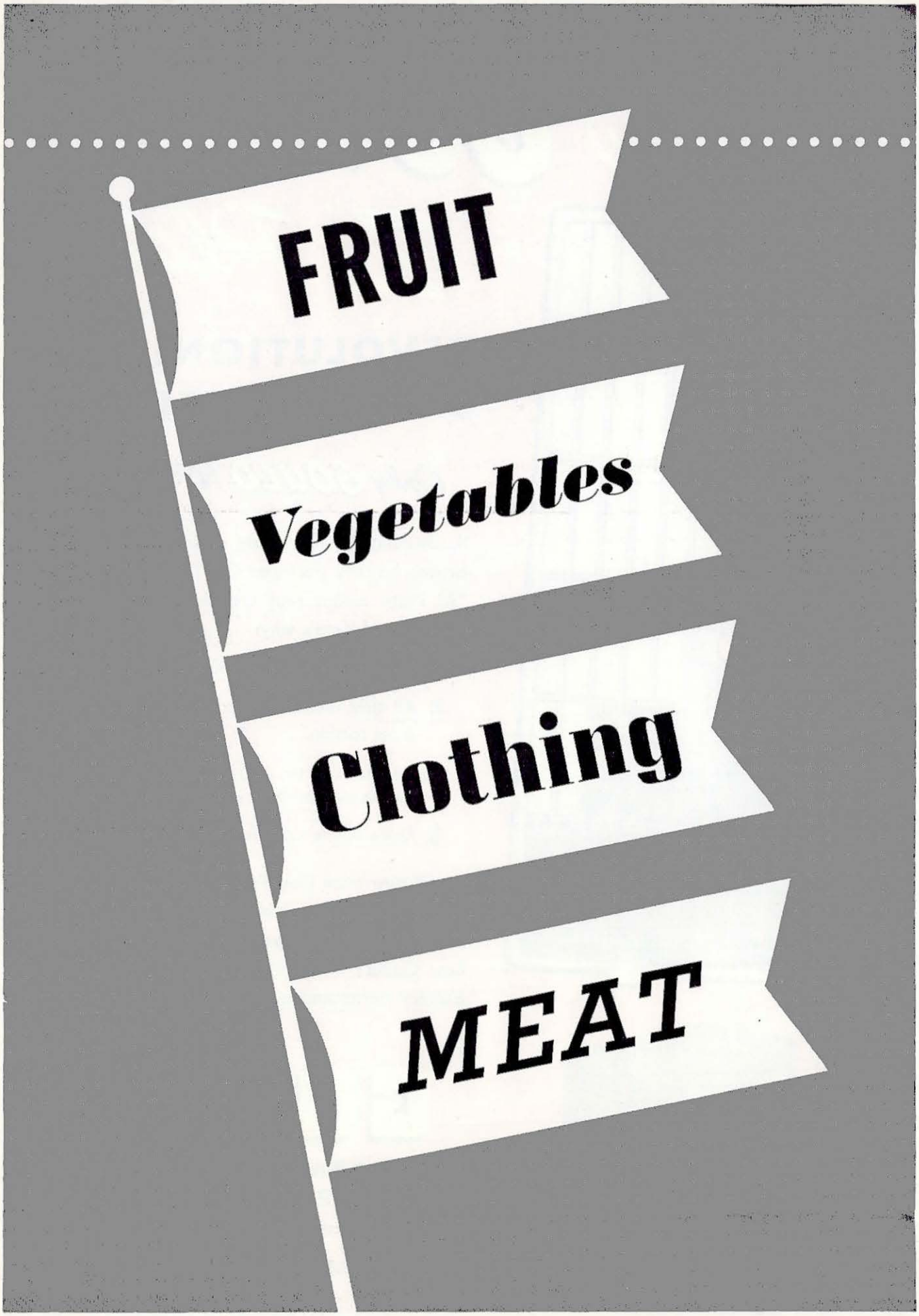
The Gould "Thirty"
More than ever—America's
Finest Industrial Truck Battery.

GOULD

STORAGE BATTERY CORPORATION

TRENTON 7, NEW JERSEY

Always Use Gould Automobile and Truck Batteries


FRUIT
Vegetables
Clothing
MEAT

...shippers expect prompt deliveries

New car purchases and extensive programs of modernizing old equipment have enabled the railroads to move a volume of freight unheard of 10 years ago. Railroads have met the demands of their shippers and their consignees for prompt and safe deliveries of consumer products and of raw materials and machinery essential to the production of these products. The railroads have maintained the continuous flow of supplies essential to our security and our welfare.

NATIONAL has furnished a large proportion of the equipment on these new and rebuilt cars. NATIONAL products were chosen because they are designed and built to provide maximum protection for lading and equipment. They reflect the high standards of the railroad industry, and help railroads to meet schedules and reduce maintenance costs. NATIONAL products can always be depended upon to deliver the goods—safely and on time.

Our sales engineers are always ready to help you apply NATIONAL products for your rebuilding or new car programs.

★ ★ ★

TRUCKS • COUPLERS • YOKES • DRAFT GEARS • JOURNAL BOX LIDS

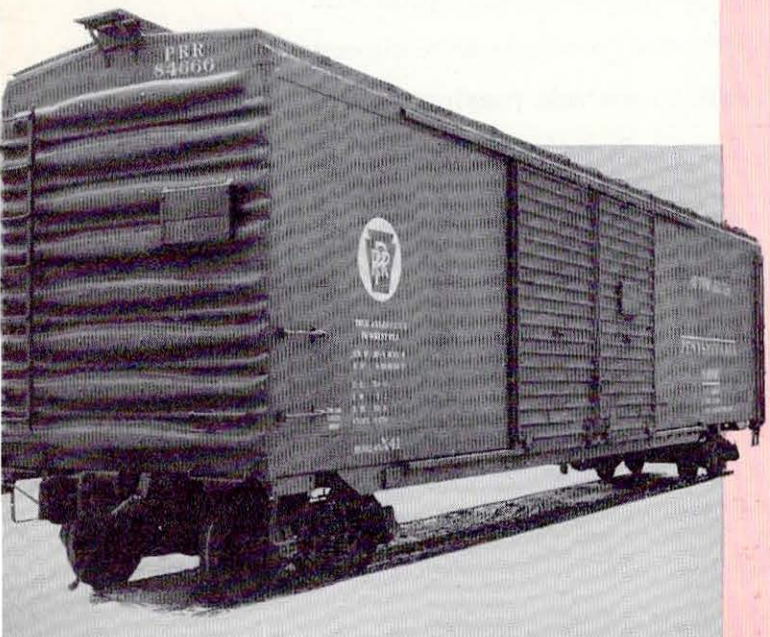
NATIONAL MALLEABLE AND STEEL CASTINGS COMPANY

Cleveland, Ohio

NATIONAL *Products* FOR TRANSPORTATION AND INDUSTRY

M&S Co. Est. 1868

If you're interested in you'll be interested



These 16,653 freight cars were ordered in 1948 built lighter or stronger and more durable with U·S·S COR-TEN

CARBON COUNTY RAILWAY
300 Hopper Cars built by Pullman Standard

CHICAGO, BURLINGTON & QUINCY
100 Parts Cars built in Company Shop
250 Box Cars built in Company Shop
500 Stock Cars built in Company Shop

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC
3,022 Box Cars built in Company Shop
2,500 Gondolas built in Company Shop

CHICAGO, ROCK ISLAND & PACIFIC
1,000 Box Cars built by Pullman Standard
1,000 Gondolas built in Company Shop

DELAWARE, LACKAWANNA & WESTERN
500 Hopper Cars built by American Car & Foundry

DENVER & RIO GRANDE WESTERN
450 Gondolas built by Pullman Standard
500 Gondolas built by Pressed Steel Car Co.

FORD MOTOR COMPANY
40 Air Dump Cars built by Magor Car Corp.

FRUIT GROWERS EXPRESS
600 Refrigerator Cars built in Company Shop

GENERAL AMERICAN TRANS. CORP.
500 Refrigerator Cars built by General American

GREAT LAKES STEEL CORP.
6 Gondolas built by Pressed Steel Car Company

GREAT NORTHERN
1,500 Box Cars built in Company Shop
500 Gondolas built by Pullman Standard

ILLINOIS CENTRAL
500 Hopper Cars built in Company Shop

MISSOURI PACIFIC
500 Gondolas built in Company Shop

NORTHERN PACIFIC
250 Refrigerator Cars built by Pacific Car & Foundry

PENNSYLVANIA RAILROAD
300 Covered Hopper Cars built in Company Shop

ST. LOUIS REFRIGERATOR CAR CO.
100 Refrigerator Cars built by A. C. & F. and Co. Shop

SEABOARD AIR LINE RAILWAY
100 Covered Hopper Cars built by Pullman Standard

SHIPPERS CAR LINE
35 Phosphate Cars built by American Car & Foundry

SPOKANE, PORTLAND & SEATTLE
500 Box Cars built by Great Northern Railway Shops
100 Gondolas built by Pullman Standard

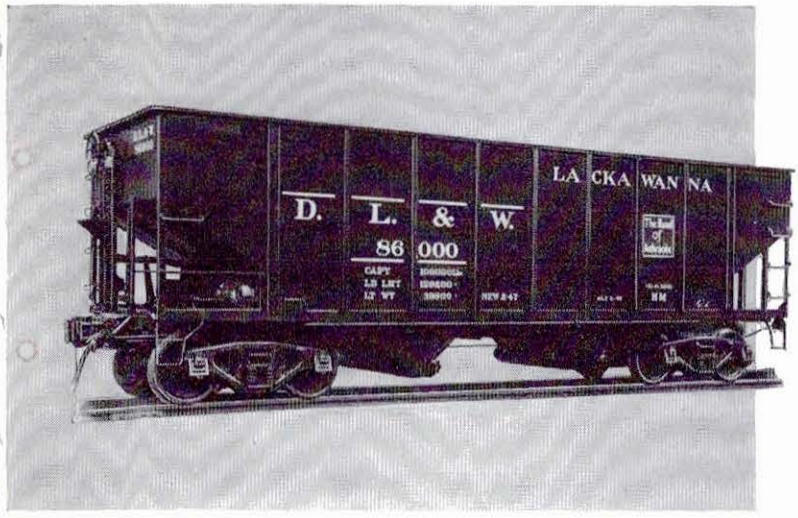
VIRGINIAN
1,000 Hopper Cars built in Company Shop

Freight Progress in U·S·S COR-TEN

In fourteen years of steadily increasing acceptance, 124,600 freight cars have been built with U·S·S Cor-Ten. These cars have reduced railroad expenses in four ways:

1. **By reducing deadweight an average of more than 2 tons per car.**
2. **By making it possible to carry an average of more than 2 tons additional payload per car.**
3. **By adding durability and cutting down repair costs.**
4. **By reducing the number of cars and trains required to haul a given net tonnage.**

TODAY, railroad management is understandably concerned with the increase in operating expenses per revenue ton mile resulting from higher wages and higher material costs. These mounting drags on profits make it more important than ever to give careful consideration to the many cost-cutting benefits that Cor-Ten construction can achieve.



In this connection, a thorough and systematic study of lightweight freight car economies recently conducted by the Association of American Railroads serves to highlight the advantages of Cor-Ten equipment. This study is based on the 1941 operating costs of 29 major railroad lines. At that time costs were considerably lower than they are today. Yet, on the figures turned up, a well-known economic authority draws the following conclusion:—

The operating and re-building economies that are assured by weight reduction and increased durability, indicate that for nearly 75% of the roads studied, *all* new freight cars could *profitably* be of lightweight construction.

Because of its fine performance in every type of freight car, Cor-Ten equipment has come to mean "the best in lightweight construction."

In all, 35 Class I railroads have recognized the economy of buying these weight-saving, cost-saving Cor-Ten cars. Most of this equipment has been bought on repeat orders. Our engineers will be glad to go into the economics of Cor-Ten construction—as applied to your designs—at any time that suits your convenience.

AMERICAN STEEL & WIRE COMPANY, GENERAL OFFICES: CLEVELAND, OHIO · CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH & CHICAGO
COLUMBIA STEEL COMPANY, SAN FRANCISCO · NATIONAL TUBE COMPANY, PITTSBURGH · TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST · UNITED STATES STEEL EXPORT COMPANY, NEW YORK

USS
U·S·S HIGH STRENGTH STEELS
U·S·S COR-TEN · U·S·S MAN-TEN · U·S·S MANGANESE-NICKEL-COPPER
UNITED STATES STEEL

improved

1 Larger Volute Spring Diameter
(Utilizes All Available Space)

2 Greater Frictional Area

3 Wider, Thicker Spring Bar

4 Greater Vertical and Lateral Stability

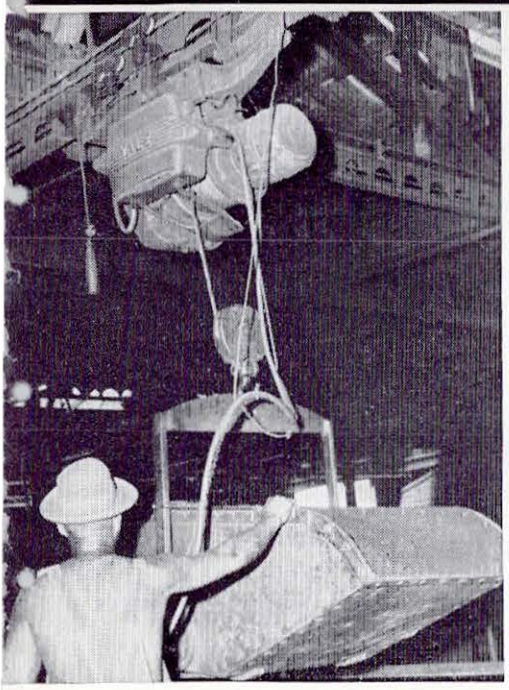
5 Alloy Spring Steel—AISI 9262

HOLLAND COMPANY
332 S. MICHIGAN AVE.
CHICAGO 4, ILLINOIS

Result: Greater ruggedness—longer life

2858

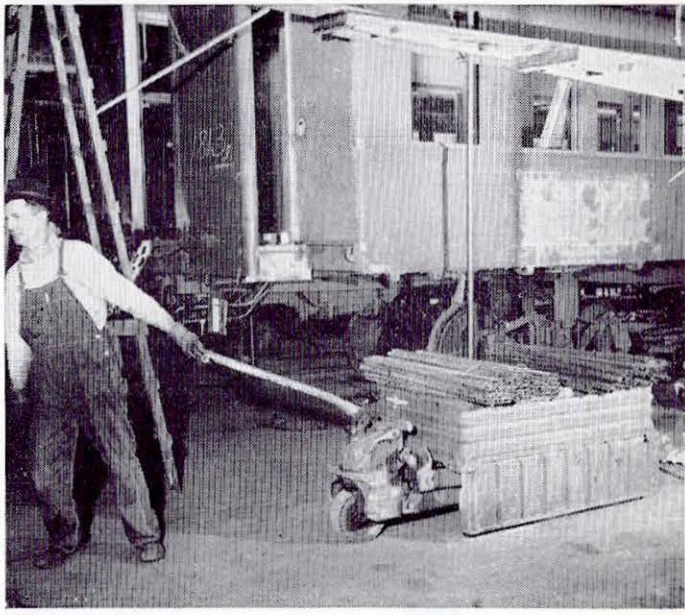
PUSH HANDLING COSTS "OVER THE HUMP" AND DOWN GO COSTS!



"DO NOT HUMP" doesn't apply to high handling costs! Push them "over the hump," switch them onto the right track and real economy is yours.

Wherever repair parts, stores and freight are handled, you have a tremendous opportunity to send costs down the grade. You can do it with Yale Material Handling Machinery! Fast, efficient Yale hand lift and power trucks move terrific tonnage per day at low cost. Quick-lifting, effort-saving Yale hand and electric hoists put needed speed, safety and economy into all rebuilding and servicing. And when it comes to dependable weighing and counting, Yale dial scales give you hairline accuracy that saves time and money.

The nearest Yale railway representative will gladly give you the benefit of his broad experience in finding cost-cutting answers to your handling problems. Let him show you how to select the right Yale material handling and weighing machinery for your particular needs. Write or phone today.



RAILWAY REPRESENTATIVES:

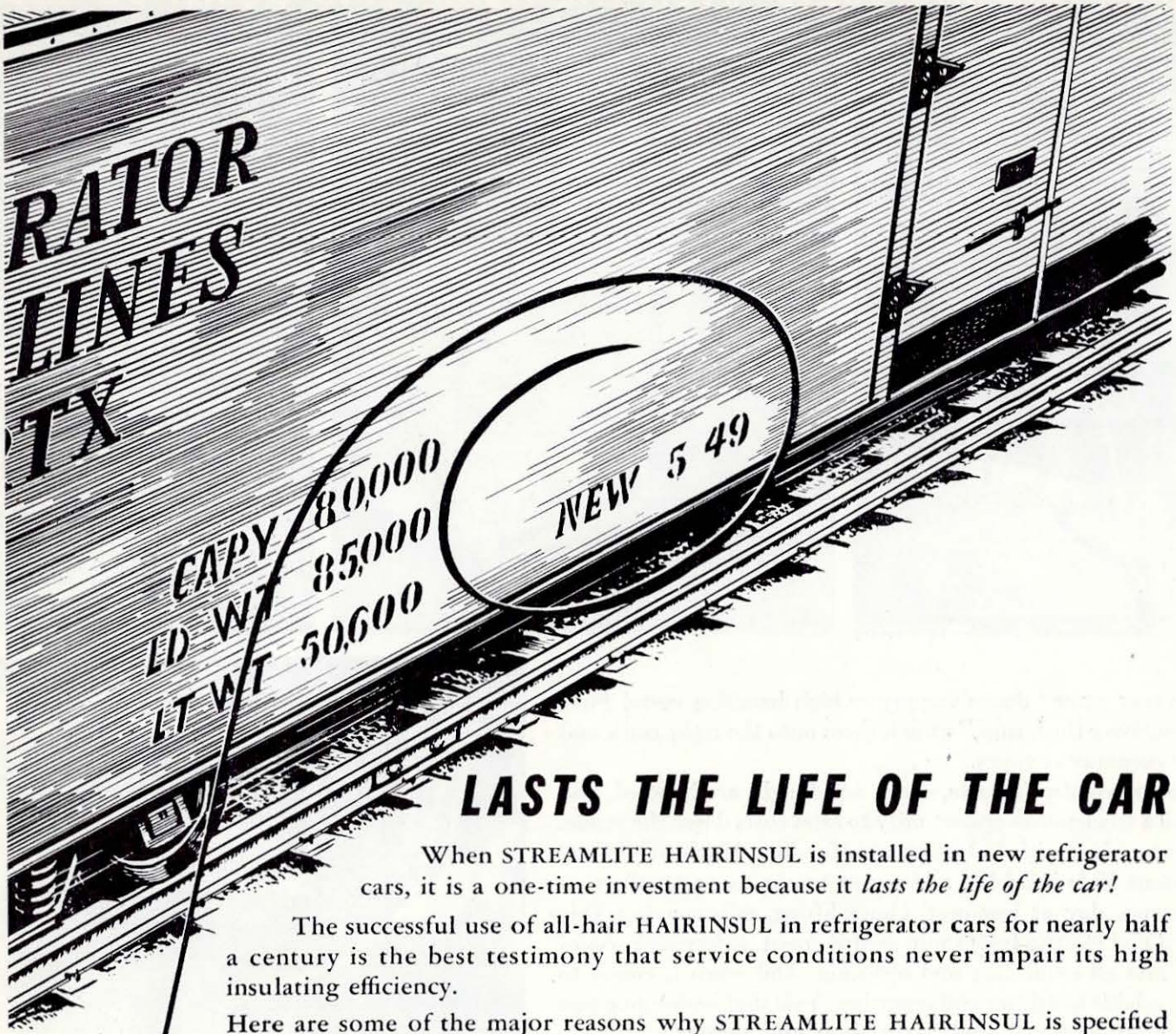
CHICAGO 1, ILL.....The Earl E. Thulin Co.....Suite 339, Hotel Sherman
CLEVELAND 15, OHIO.....C. E. Murphy.....923 Midland Bldg.
NEW YORK 17, N. Y.....Eastern Railway Supplies, Inc.....110 East 42nd Street
SAN FRANCISCO 5, CALIF.....Overland Supply Co.....55 New Montgomery St.
ST. LOUIS 1, Mo.....Clarence Gush.....Railway Exchange Bldg.
ST. PAUL 4, MINN.....Robert J. Wylie.....2300 University Ave.
WASHINGTON 5, D. C.....Ralph W. Payne.....Metropolitan Bank Bldg.

YALE
TOOLS THAT KEEP INDUSTRY "ON THE MOVE"

THE YALE & TOWNE MANUFACTURING CO.
Department L-46
ROOSEVELT BOULEVARD
PHILADELPHIA 15, PA.

YALE

MATERIAL HANDLING MACHINERY · *hoists . . . hand and electric* · *trucks . . . hand lift and power* · *industrial dial scales*

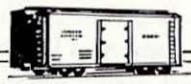


LASTS THE LIFE OF THE CAR

When STREAMLITE HAIRINSUL is installed in new refrigerator cars, it is a one-time investment because it *lasts the life of the car!*

The successful use of all-hair HAIRINSUL in refrigerator cars for nearly half a century is the best testimony that service conditions never impair its high insulating efficiency.

Here are some of the major reasons why STREAMLITE HAIRINSUL is specified by leading refrigerator car lines. Write for complete data.



LOW CONDUCTIVITY. Thoroughly washed and sterilized, all-hair heat barrier. Rated conductivity—.25 btu per square foot, per hour, per degree F., per inch thick.

LIGHT WEIGHT. Advanced processing methods reduce weight of STREAMLITE HAIRINSUL by 40%.

PERMANENT. Does not disintegrate when wet, resists absorption. Will not shake down, is fire-resistant and odorless.

EASY TO INSTALL. Blankets may be applied to car wall in one piece, from sill to plate and from one side door to the other. Self-supporting in wall sections between fasteners.

COMPLETE RANGE. STREAMLITE HAIRINSUL is available ½" to 4" thick, up to 127" wide. Stitched on 5" or 10" centers between two layers of reinforced asphalt laminated paper. Other weights and facings are available.

HIGH SALVAGE VALUE. The all-hair content does not deteriorate with age; therefore has high salvage value. No other type of insulation offers a comparable saving.

Dept. H95 Merchandise Mart Chicago 54, Ill.

Remove excess metal faster with CLECO Grinders and Sanders

For more work in less time, CLECO Grinders and Sanders are preferred. High power, perfect balance and smoother operation result in lowest costs through increased speed and reduced operator fatigue. The other CLECO features listed at the right result in long life and reduced maintenance. Write for full information.

- **Plenty of power and speed.**
- **Continuous lubrication of entire motor assembly.**
- **Balanced design for smooth operation and reduced operator fatigue.**
- **Governor controls motor speed at all loads — reducing air consumption.**
- **Instant starting and steady power.**

COMPLETE RANGE OF SIZES

CLECO Grinders and Sanders are made in all sizes — for fine tool and die work or heavy duty production grinding. Write for full information.

CLECO MAKES AIR TOOLS FOR EVERY PURPOSE

Grinders — Sanders — Rotary Drills
Riveters — Sand Rammers — Chippers
Scaling Tools — Impact Wrenches — Screwdrivers — Hose Fittings — Sump Pumps

Back of CLECO Products . . . with 25 years experience in precision manufacturing, is the REED ROLLER BIT COMPANY, one of the largest companies of its kind in the world.

We assure you: The most advanced engineering • Uniform and standardized quality products • World-wide distribution and complete service facilities traditional with REED.

CLECO AIR TOOLS — CLECO ACCESSORIES

CLECO DIVISION

of the REED ROLLER BIT COMPANY, P. O. Box 2119, Houston 1, Texas, U. S. A.

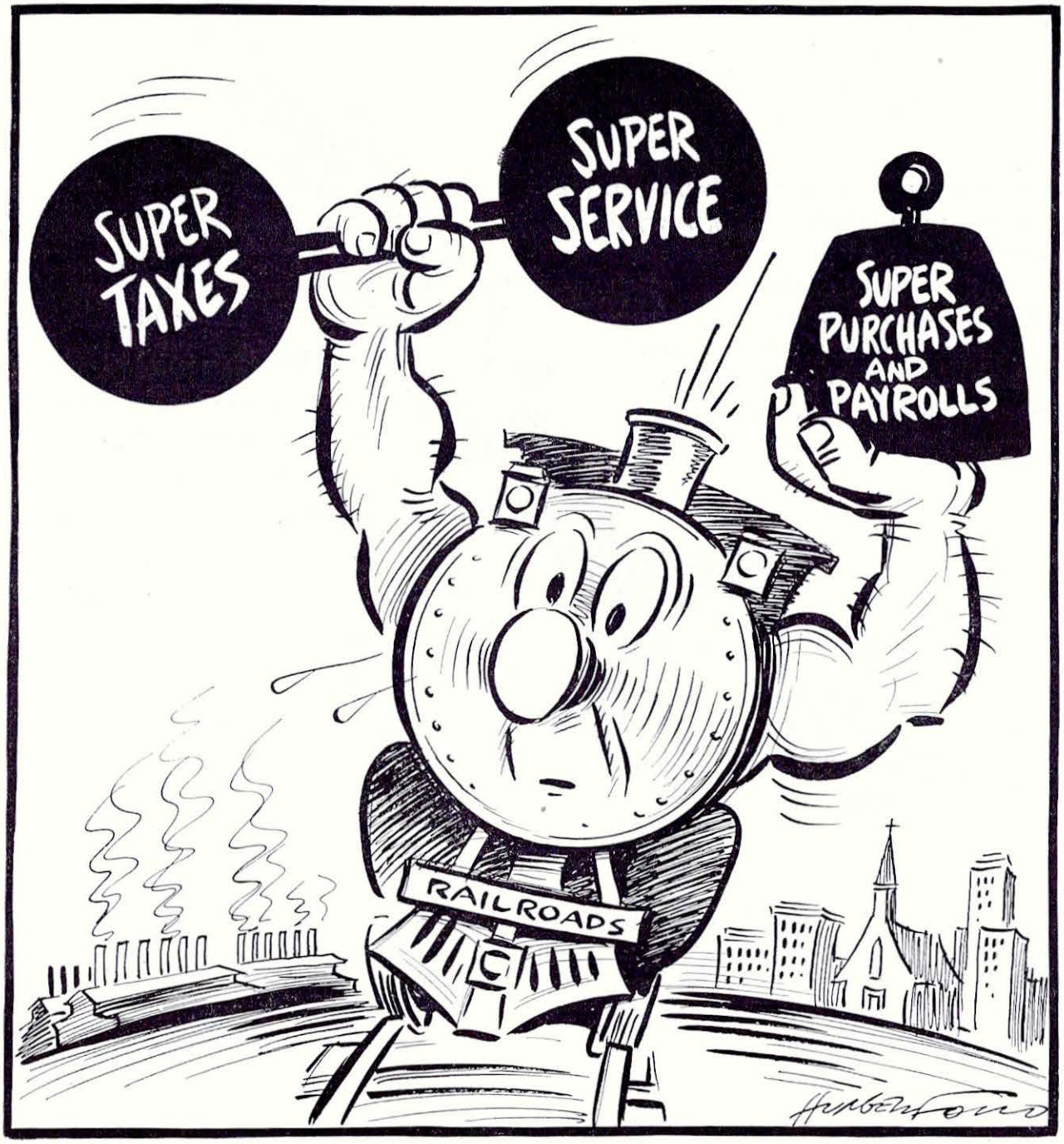
DIVISION OFFICES — RAILROAD DEPARTMENT

San Francisco, California	Chicago, Illinois	Atlanta, Georgia	New York City, N. Y.
607 Market Street, Room 304	21 N. Jefferson St.	7 Peachtree St., Room 502	50 Church Street

In Canada: Cleco Pneumatic Tool Company of Canada, Ltd., 927 Millwood Road, Toronto (Leaside), Ontario

DISTRIBUTORS IN PRINCIPAL CITIES OF THE UNITED STATES AND THROUGHOUT THE WORLD

Superman Comes to Town —By Hungerford



Watch for other railroad cartoons by Mr. Hungerford

A cut of suitable size may be obtained at cost by anyone wishing to reproduce the above cartoon.

Address requests to:

Edgewater Steel Company,
P. O. Box 478, Pittsburgh 30, Pennsylvania.

"THE ORIENTAL LIMITED"
"FAST MAIL"
GREAT NORTHERN RAILWAY COMPANY

...Two more great "name" trains in Diesel service using

Pictured above is one of the nine 4500 H.P. Diesel-electric locomotives in service between St. Paul, Minnesota, and Wenatchee, Washington, on the Oriental Limited and the Fast Mail of the Great Northern Railway. This is one of the more than 40 railroads that now use Standard HD on their heaviest passenger and freight runs, because they find that this detergent heavy-duty lubricant contributes to lower maintenance and operating costs. Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.

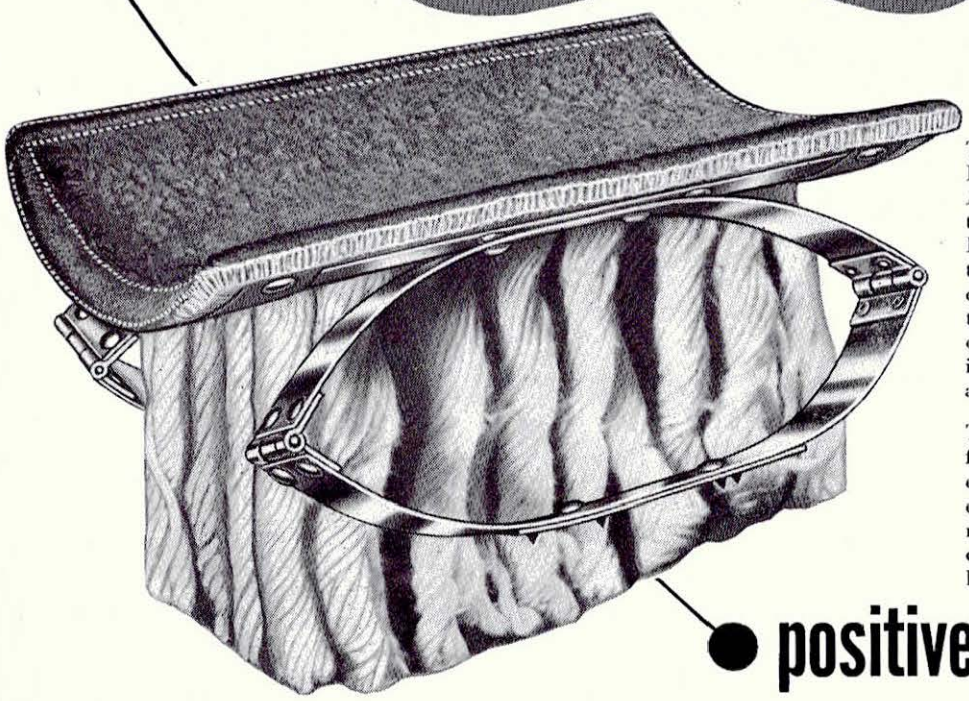
Standard HD Diesel Oil

STANDARD OIL COMPANY (INDIANA) STANDARD

Modern MAGNUS BEARINGS *Improved*

magnus spring pad lubricator

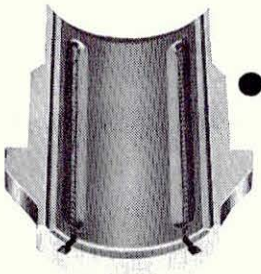
type "RB"



The Magnus Type "RB" Spring Pad Lubricator is easily inserted in the A.A.R. round bottom box and is easy to remove. The journal oil in the Magnus Spring Pad Lubricator climbs the absorbent fibers and feeds a continuous supply of oil to the Journal through anti-glaze material. The oil film between Journal and Bearing is positively maintained under all conditions of weather and speed.

The Magnus Lubricator acts like a filter. Dirt or other impurities cannot climb the vertical fibers which carry the oil, and dust or impurities naturally gravitate to the bottom of the Journal Box. There's no loose packing to cause "waste-grabs."

positive, uniform oil feed

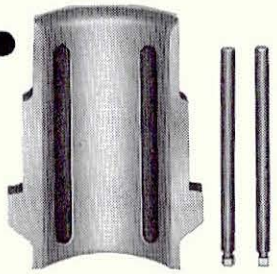


"magsafe" satco-lined journal bearing

This bearing complies with A.A.R. standards but is equipped with two "T" section brass "combs", which drop down and hug the journal at all times regardless of whether the journal is new or turned down to the limit of wear The brass "combs" prevent lint and strands of waste from climbing the Journal, and assure uniform lubrication all the way across the journal. Oil stored in the bearing is available the instant the car starts to move.

"twinplex" satco-lined alarm journal bearing

A standard A.A.R. dimension bearing containing two brass tubes, each having a small orifice sealed with a fusible metal. At 350° F., one tube releases a penetrating odor, the other a dense white smoke, thus giving double warning of rising temperature in the Journal Box



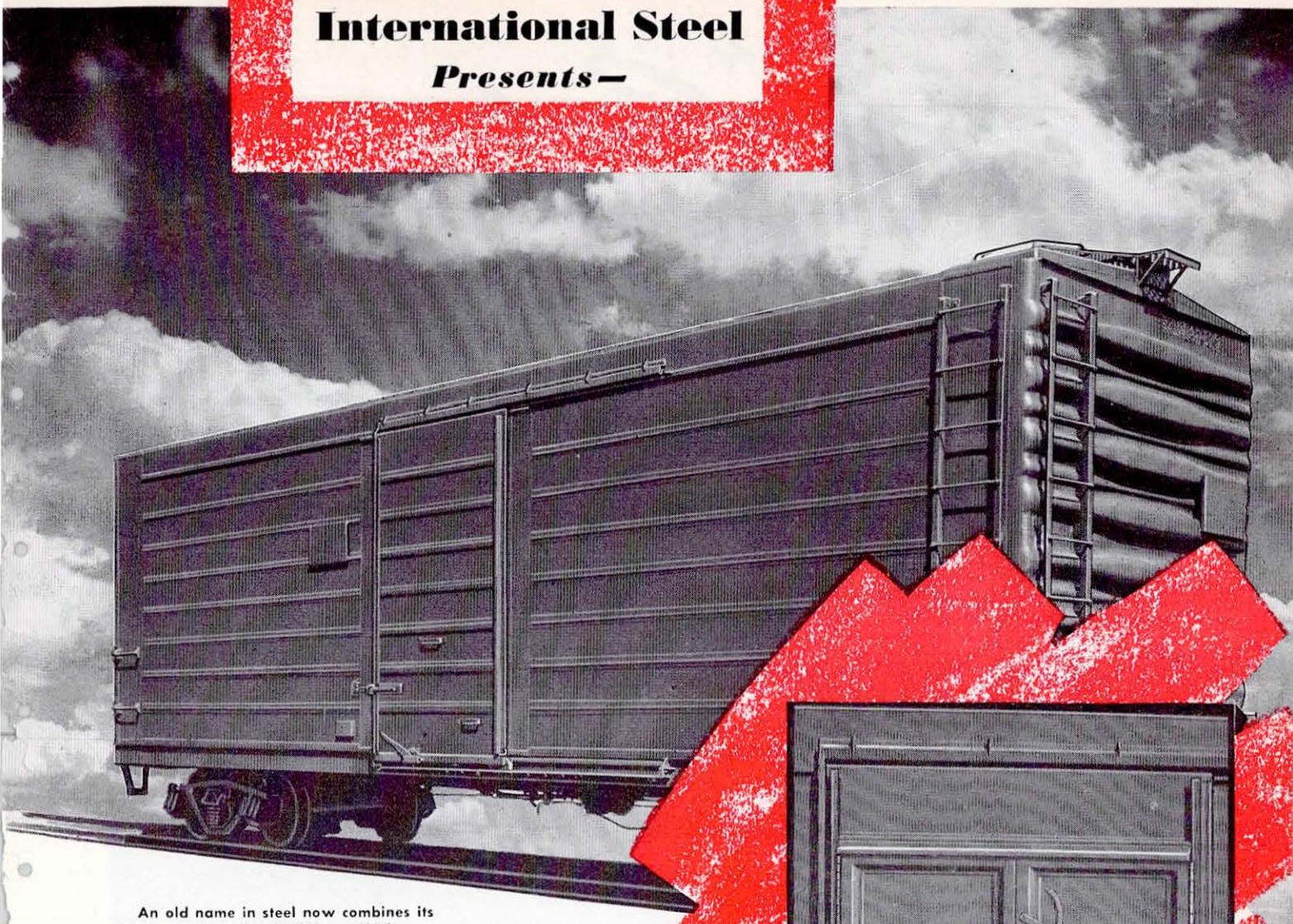
SATCO Bearing Metal

MODERN HEAVY DUTY BEARINGS

MAGNUS METAL CORPORATION

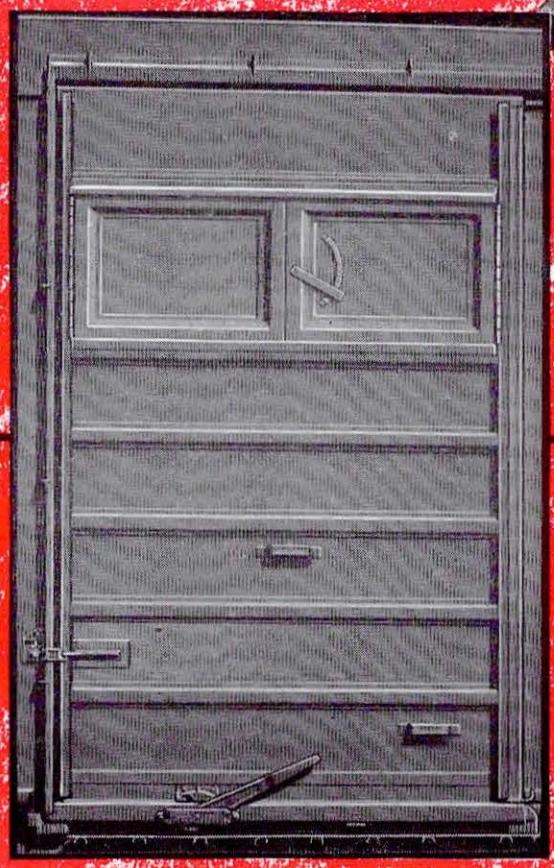
CHICAGO NEW YORK

International Steel
Presents—



An old name in steel now combines its precision manufacturing facilities with the 50-year experience of one of the most respected names in Railroad Car Building to produce the . . .

. . . NYSTROM SIDE DOOR



Patented and Patents Pending

. . . designed for fast, inexpensive application to A.A.R. Standard Box and Automobile Cars; *more accurately aligned* and built to closer tolerances than have ever before been specified.

The new, positive interlocking top and bottom safety feature completely solves a serious and long-standing problem by eliminating loss of doors, injuries and damage. *The* NYSTROM SIDE DOOR *is designed to* enlist, *rather than combat, internal pressure for sealing, which (with the addition of the hinged upper section as shown at the right) facilitates grain loading and inspection as well as ensuring a grain-tight door without the expensive use of wood or steel-reinforced paper grain doors.*

Prompt delivery, packaged in multiple units for faster, easier handling . . . less fitting in shops . . . very speedily installed . . . 1500 sets now in use on one of America's leading Class I Roads.

INTERNATIONAL STEEL CO. RAILWAY DIVISION

Evansville 7, Indiana

Shippers "Cash-in" on High Grade Service

Shippers become satisfied customers when their wares come through regularly on schedule—and in cars that protect the lading against damage. No fuss—no claims—everybody's happy.

But both faster speeds and protection to lading are largely dependent upon the air brakes. The modern versions of the "AB" and 24-RL Brake Equipments safeguard cars and lading, and are largely responsible for modern fast and more efficient freight train operation.

These reliable modern freight brakes with their sensitive calibration for better slack control provide smooth retardation and ample protection for lading and equipment because there are No Bumps—No Jars in freight service. The increased application of these brakes pave the way to faster, safer, more profitable operation and to greater shipper satisfaction.

The New York Air Brake Company

420 Lexington Ave., New York 17, N.Y. Plant: Watertown, N.Y.

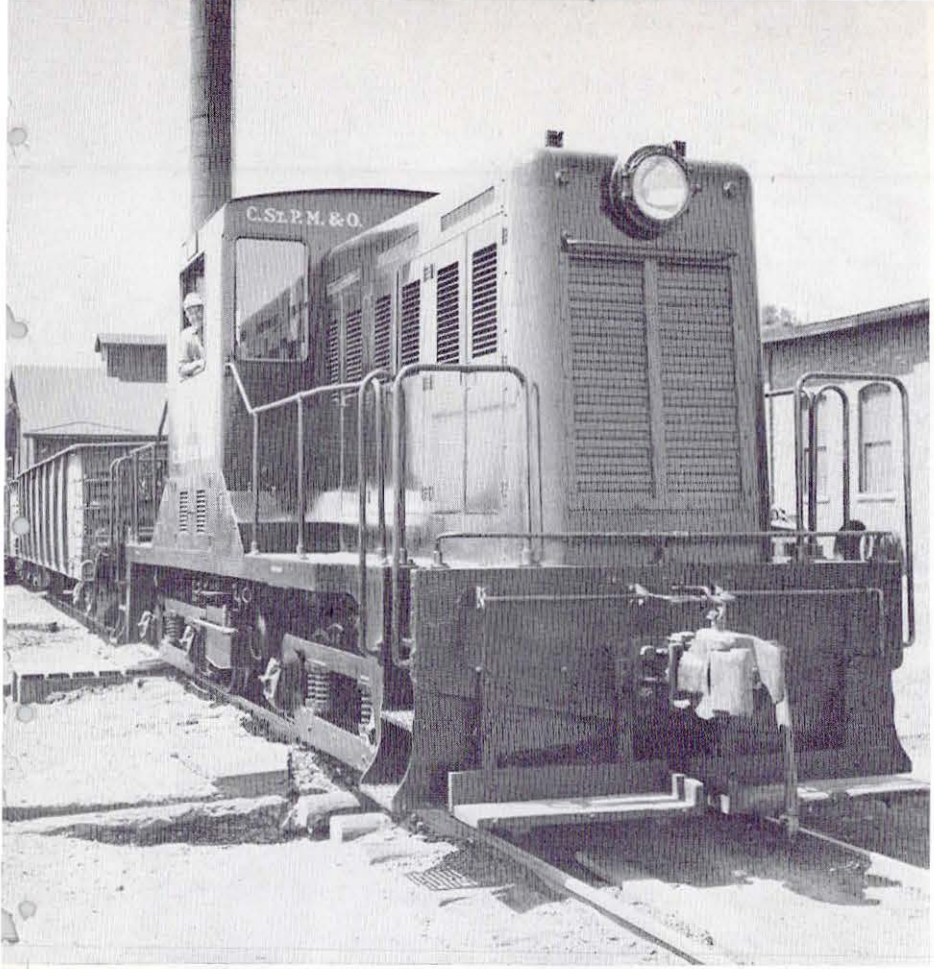
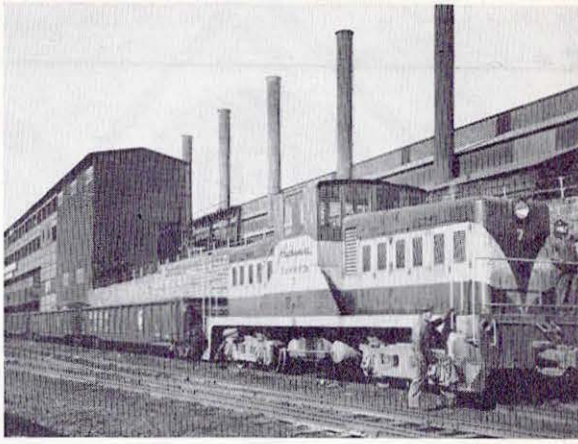


PHOTO COURTESY CATERPILLAR TRACTOR CO.

Whitcomb 44-ton Diesel switcher purchased by the Chicago, St. Paul, Minneapolis and Omaha Railroad for operation at Sioux City, Iowa. Powerful, economical Whitcomb Diesels make top-notch switching locomotives.

Whitcomb 70-ton Diesel locomotive pulls a string of 52-foot Gondola cars on the Steelton & Highspire Railroad in the Steelton, Pennsylvania, area.



Whitcomb 44-ton Diesel electric locomotive operated by the Chicago, Milwaukee, St. Paul and Pacific Railroad Company switching near Milwaukee, Wisconsin.

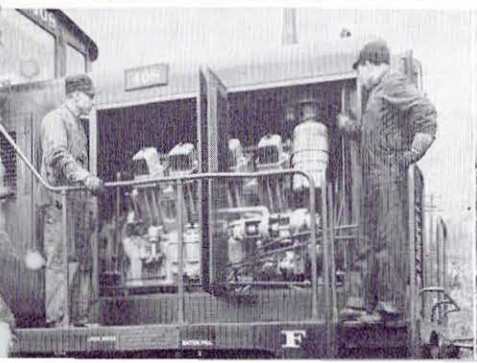
Whitcomb Diesel Locomotives Are Top-Notch Performers in Light Switching and Hauling Jobs

On important railroads across the country you'll find Whitcomb Diesel locomotives turning in topnotch performances year after year — providing the economy, the high availability, the durability needed for fast, efficient, low cost switching and hauling. The complete dependability, the low maintenance costs, the long life of Whitcomb Diesel locomotives add up to profit for any road.

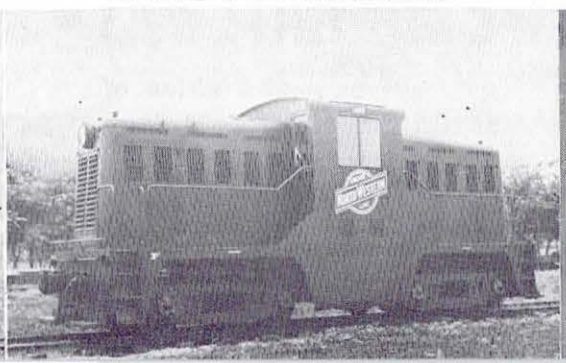
Write today for complete data covering the fine engineering, equipment and construction provided in the new Whitcomb Diesel locomotives. There's a Whitcomb Diesel electric locomotive in a size to meet your needs — from 44 to 95 tons.

44-ton Whitcomb Diesel electric locomotive doing an important railroad job at Estherville, Iowa, on the Chicago, Rock Island and Pacific Railroad.

Easy access to engine is provided in this 44-ton Whitcomb Diesel switching locomotive.



44-ton Whitcomb Diesel locomotive on the tracks of the Chicago & North Western Railway.



There is no power cheaper than Diesel; no locomotive finer than a Whitcomb.

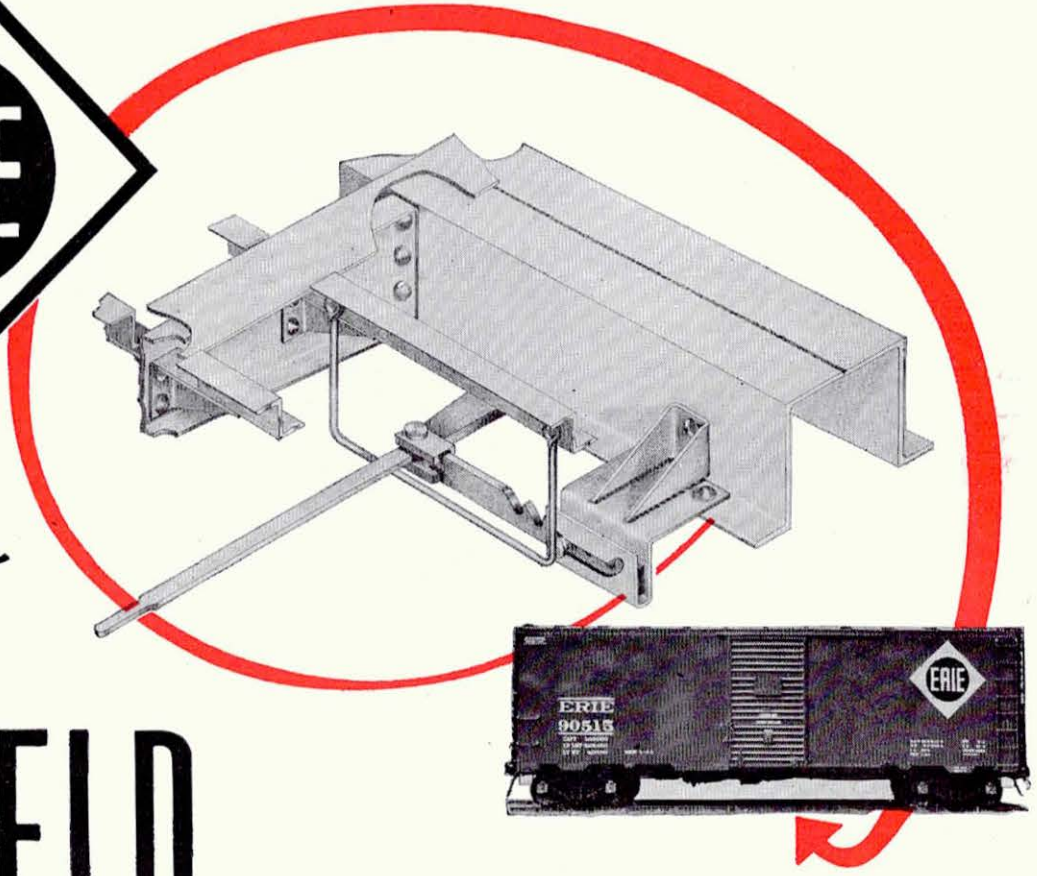
BLW THE BALDWIN GROUP

THE WHITCOMB LOCOMOTIVE CO.
ROCHELLE, ILLINOIS

Subsidiary of
THE BALDWIN LOCOMOTIVE WORKS

ERIE

applies



AMWELD BRAKE SLACK ADJUSTERS

AMWELD Slack Adjusters are in operation on these railroads:

Chesapeake and Ohio R.R.
Cudahy Car Lines
Erie Railroad Co.
Ford Motor Company
General American Trans. Corp.
Mather Stock Car Co.
New York, New Haven & Hartford R.R.
Norfolk and Western R.R.
North American Car Corp.
Union Railway Co.
Virginian Railway
Wheeling and Lake Erie R.R.
Baltimore & Ohio R.R.
Delaware and Hudson R.R.
Interstate Railroad Co.
Southern Railway System
General Chemical Division (Allied Chemical & Dye Corp.)
Cities Service Oil Co.
Western Maryland R.R.
Delaware, Lackawanna & Western R.R.
Chicago, Rock Island and Pacific R.R.

. . . and orders have been received from:

Central Railroad Co. of N.J.
Duluth, South Shore & Atlantic R.R.
Escanaba & Lake Superior R.R.
Nashville, Chattanooga & St. Louis R.R.
St. Louis-San Francisco R.R.
Shippers' Car Line Corp.
Mexican Petroleum Corp.

Seven hundred new Erie 50-ton steel boxcars, built by the American Car and Foundry, are being equipped with AMWELD Brake Slack Adjusters, Type B-2, as illustrated.

More and more railroads are recognizing the many advantages that accrue from using AMWELD Brake Slack Adjusters.

Three models, "T", "B" and "C" are adaptable and easily installed on all types of freight cars.

Your request for information regarding AMWELD Brake Slack Adjusters will bring complete data including typical application prints.

AMWELD RAILWAY EQUIPMENT

Division of

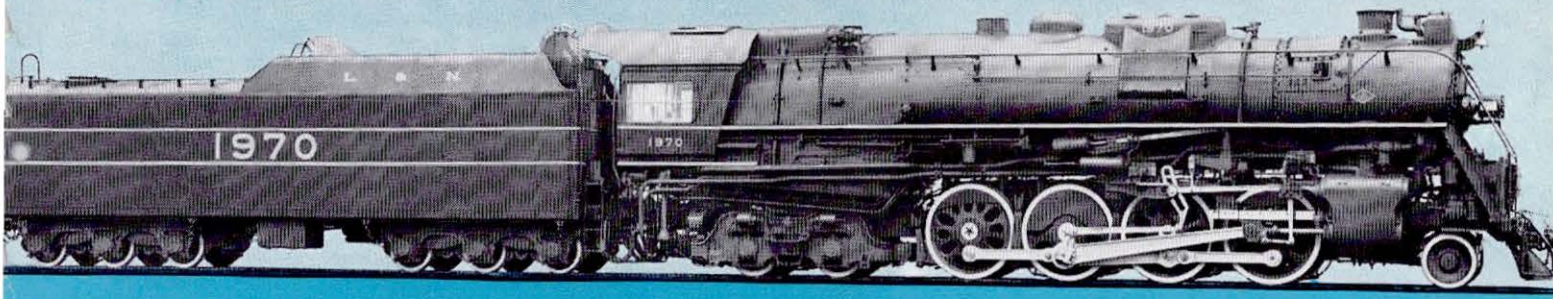
THE AMERICAN WELDING & MANUFACTURING COMPANY

250 DIETZ ROAD • WARREN, OHIO

Now Being Delivered

22 More 2-8-4's for the L & N

Built by Lima-Hamilton Corporation



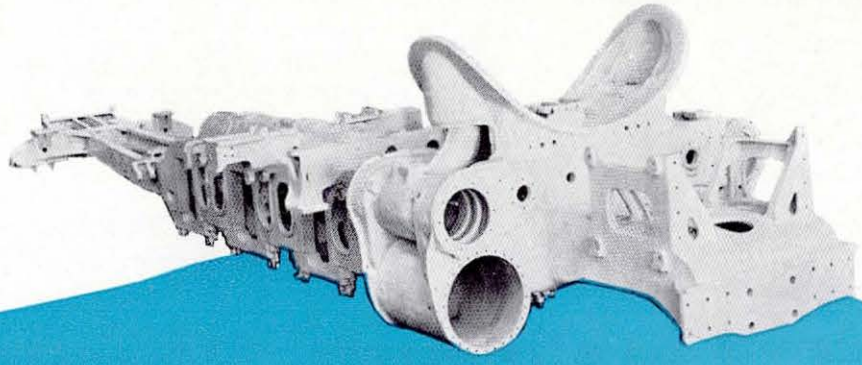
Equipped with COMMONWEALTH

- Locomotive Beds
- Engine Trucks
- Tender Frames
- Trailer Trucks
- Tender Trucks — Straight Equalizer Type
- Boxpok Driving and Trailer Wheels

The *third lot* of powerful, modern steam freight locomotives for the L & N is now being delivered, completely equipped with COMMONWEALTH cast steel devices. Two previous lots were built in 1942 and 1944.

This renewal order is evidence of the efficient operation of these strictly modern freight locomotives, and a striking recognition of the valuable contribution of COMMONWEALTH Products to locomotive efficiency.

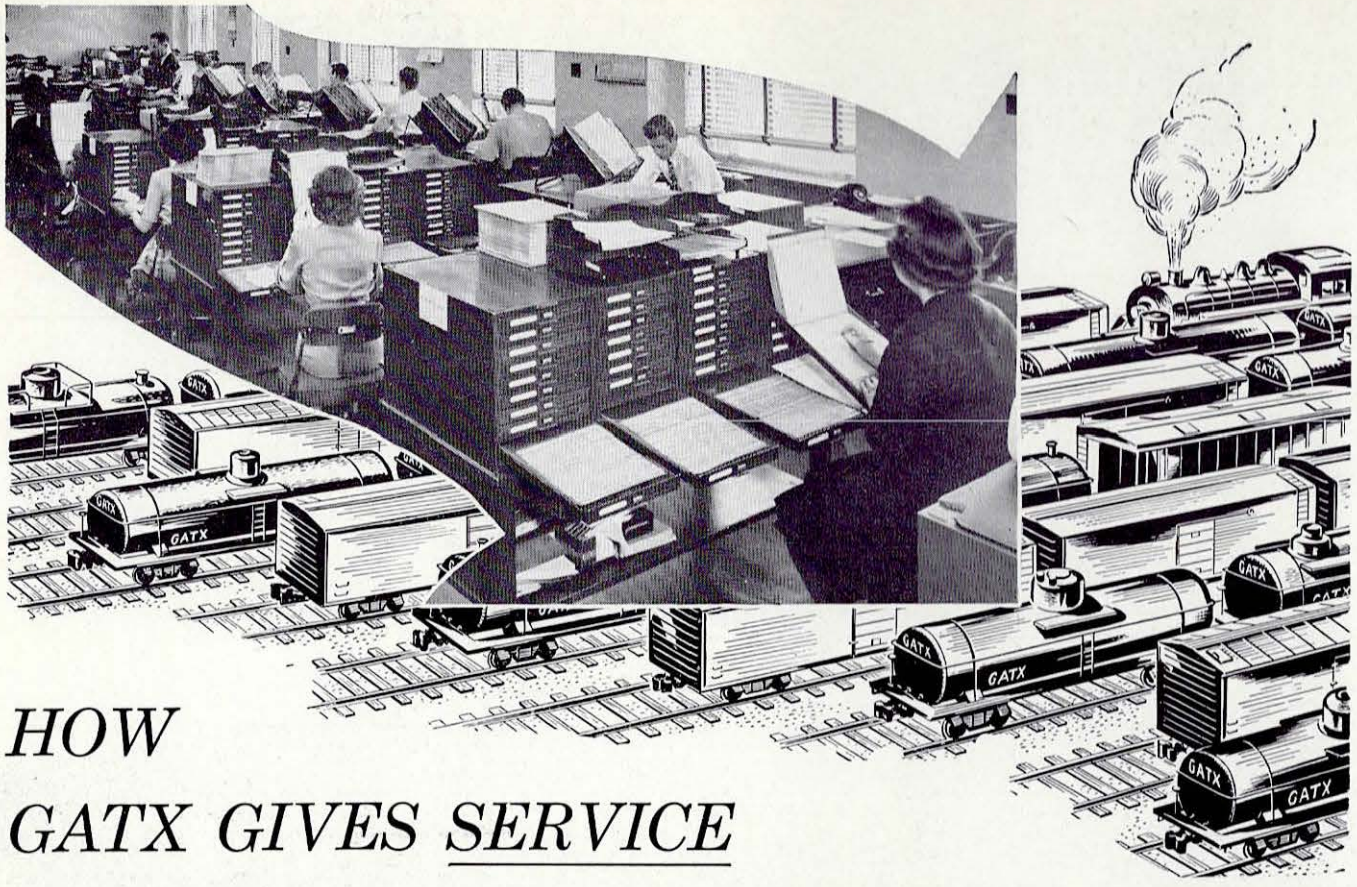
To assure lowest operating costs, better performance and highest availability for active service, specify COMMONWEALTH LOCOMOTIVE PRODUCTS.



One-piece locomotive bed for L & N 2-8-4's

GENERAL STEEL CASTINGS

Granite City, Ill. • Eddystone, Pa.



HOW GATX GIVES SERVICE WITH KARDEX CAR CONTROL

GATX must distribute more than 40,000 tank cars of 207 types to meet the special and seasonal needs of shippers everywhere. A Kardex Visible System in the hands of experienced traffic personnel gives the accurate, up-to-the-minute records which enable General American Transportation Corp. to furnish this service in cooperation with the railroads. This GATX system has demonstrated the value of Kardex car records over many years.

NOW! Remington Rand introduces the new Kardex-Dexigraph method for car records and reports

Field analyses under actual operating conditions indicate this brand-new system will

$ $ $...give you *positive* car control

$ $ $...save you hundreds of thousands

- Complete, convenient information on each car with its history for up to six years. Vital facts on each car shown by a glance.
- Dexigraph copies of these visible facts provide *as-of-the-moment* reports and statements.
- No more manual copying of car numbers. Fewer clerical errors. Fewer checking operations.
- Faster, more accurate in posting, reference, car count, follow-up and tracing. No more transfer postings.
- Less office space for records and work. Fewer desks. Expensive record forms eliminated. No storage space for car records.
- Easily adapted to your present setup and procedures. Improved office efficiency and working conditions. Simplified organizational flow.

Write for an initial conference concerning a survey to discover the savings possible in *your* organization with the Kardex-Dexigraph method for car records and reports. Absolutely no obligation. Remington Rand Inc., Transportation Systems Dept., 315 Fourth Avenue, New York 10, N. Y.

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Keeping pace with railroad progress **Remington Rand** *the FIRST name in business systems*

PULLMAN-STANDARD TOTAL FREIGHT CAR PRODUCTION*

1947

1948

*DOMESTIC

THE LARGEST FREIGHT-CARRYING CAPACITY IN HISTORY FROM ANY CARBUILDER

PULLMAN-STANDARD

RAILROAD AND PRIVATE SHOPS

ALL OTHER CARBUILDERS

TOTAL 1948 PRODUCTION OF ALL FREIGHT CARBUILDERS

Here's production progress

THAT BENEFITS THE RAILROADS

One out of every four freight cars delivered to the railroads in 1948 came from Pullman-Standard—more freight-carrying capacity than was ever before delivered by a single builder in a like period.

Not volume alone, but *economy* and *improved quality,* marked Pullman-Standard's production progress in 1948 . . . *economy* through specialized, assembly-line methods and centralized control; *better quality* resulting from superior carbuilding experience, constant field studies of cars in service, and continuing research.

Pullman-Standard

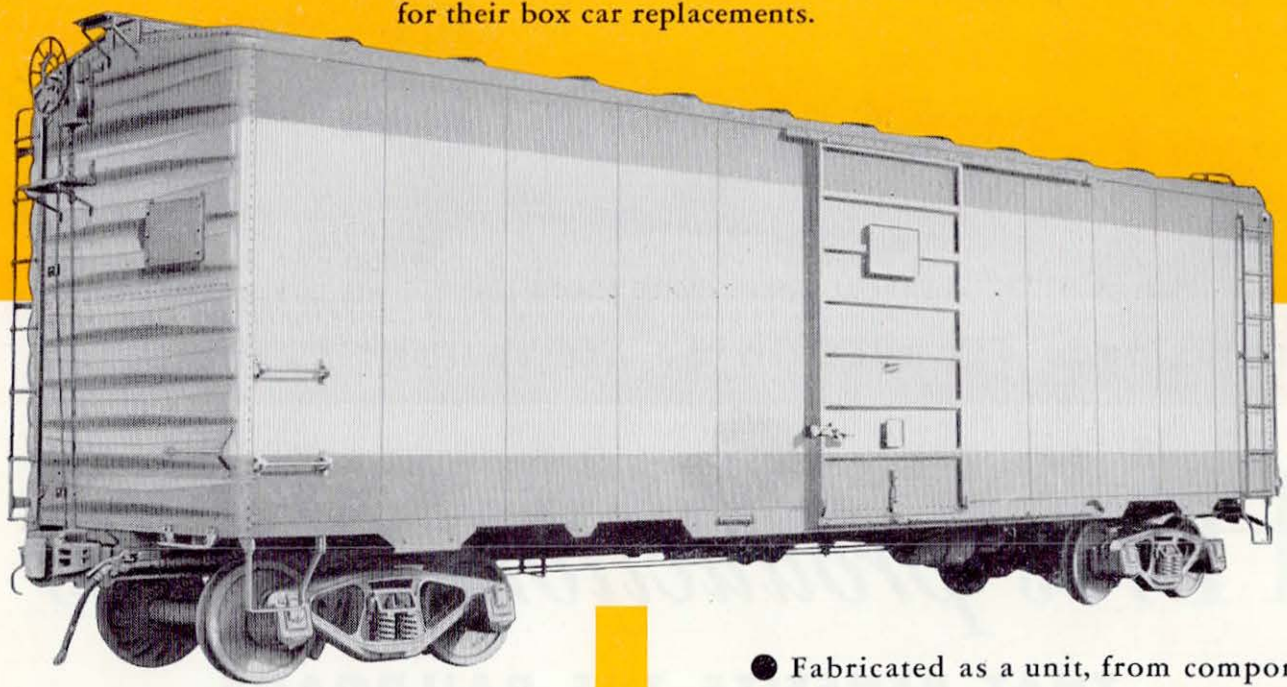
CAR MANUFACTURING COMPANY

Standardization

PS-1...HIGH-QUALITY STANDARDIZED BOX CAR

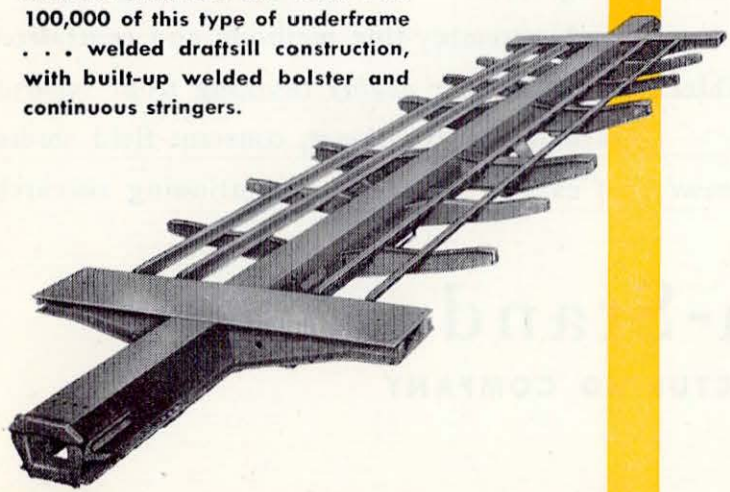
Two years ago, when top-quality box cars were needed *fast,* Pullman-Standard introduced PS-1—the first *standardized* box car to win the approval of America's railroads. Today, 18,000 PS-1's are *proving* their quality in service from coast to coast.

The cost-cutting, time-saving advantages of mass production methods have been proved by American industry. They offer the railroads one means of saving man-hours and reducing expenses—by specifying PS-1 for their box car replacements.



PS-1 UNDERFRAME

Since first developed in 1934, Pullman-Standard has built over 100,000 of this type of underframe . . . welded draftsill construction, with built-up welded bolster and continuous stringers.



● Fabricated as a unit, from components mainly engineered and manufactured by Pullman-Standard, PS-1 is *rapidly* produced at peak efficiency. During 1948, PS-1 production averaged well over 1,100 cars a month.

Our special service on PS-1 replacement parts and components makes it the easiest of all box cars to keep rolling and earning.

makes headway

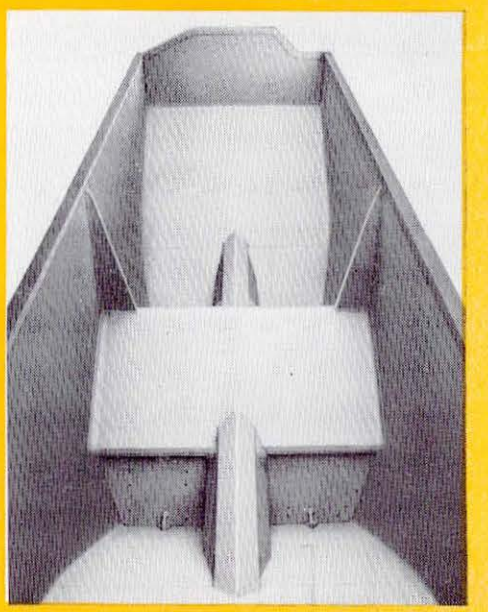
WELDED HOPPER CARS DESIGNED FOR MASS PRODUCTION

Modern, fast-clearing, welded hopper cars, built to stand the gaff of heavy traffic conditions, are fully engineered for immediate construction. Applying assembly-line principles, and using Pullman-Standard-built components to a larger extent than ever before, these P-S Hopper Cars are fabricated as a unit to meet the most exacting requirements.

Extensive use of welding lightens car weight and seals against corrosion; provides smooth interiors for chute-like dumping action. To get real value for your equipment dollar, investigate what Pullman-Standard Hopper Cars have to offer.

NOTE THESE IMPORTANT FEATURES

1. Smooth, corner-free interior, designed at all points to speed clearing.
2. Less dead weight, more *pay load* per unit of motive power.
3. Economical in maintenance, because of high-quality materials and superior workmanship.
4. Improved, well-balanced design for all-over structural strength.



Pullman-Standard

CAR MANUFACTURING COMPANY

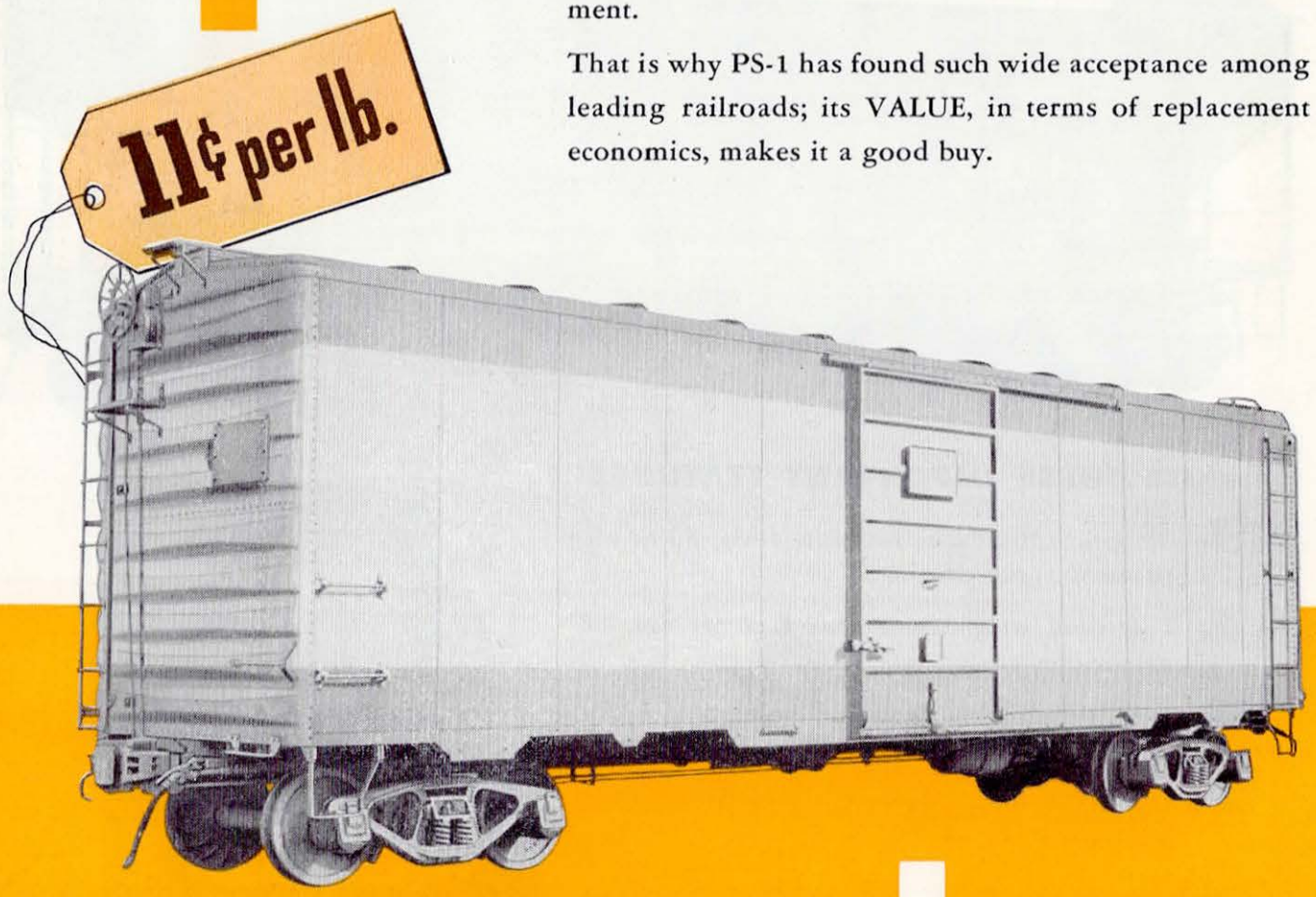
CHICAGO • NEW YORK • CLEVELAND • WASHINGTON, D. C.
PITTSBURGH • BIRMINGHAM • WORCESTER, MASS.
SAN FRANCISCO SALES REPRESENTATIVE: MARK NOBLE

Price tags tell only part of the PS-1 *Value story*

● A reasonable price tag is only the first evidence of the sound *value* built into PS-1 box cars. The economies of high availability, low maintenance, and long life should be reflected for years in their operating-cost figures, judging from their performance to date.

The relationship of the first cost of new cars to the cost of maintaining old ones, or operating cars which are obsolete, is a major factor in the economics of replacement.

That is why PS-1 has found such wide acceptance among leading railroads; its VALUE, in terms of replacement economics, makes it a good buy.

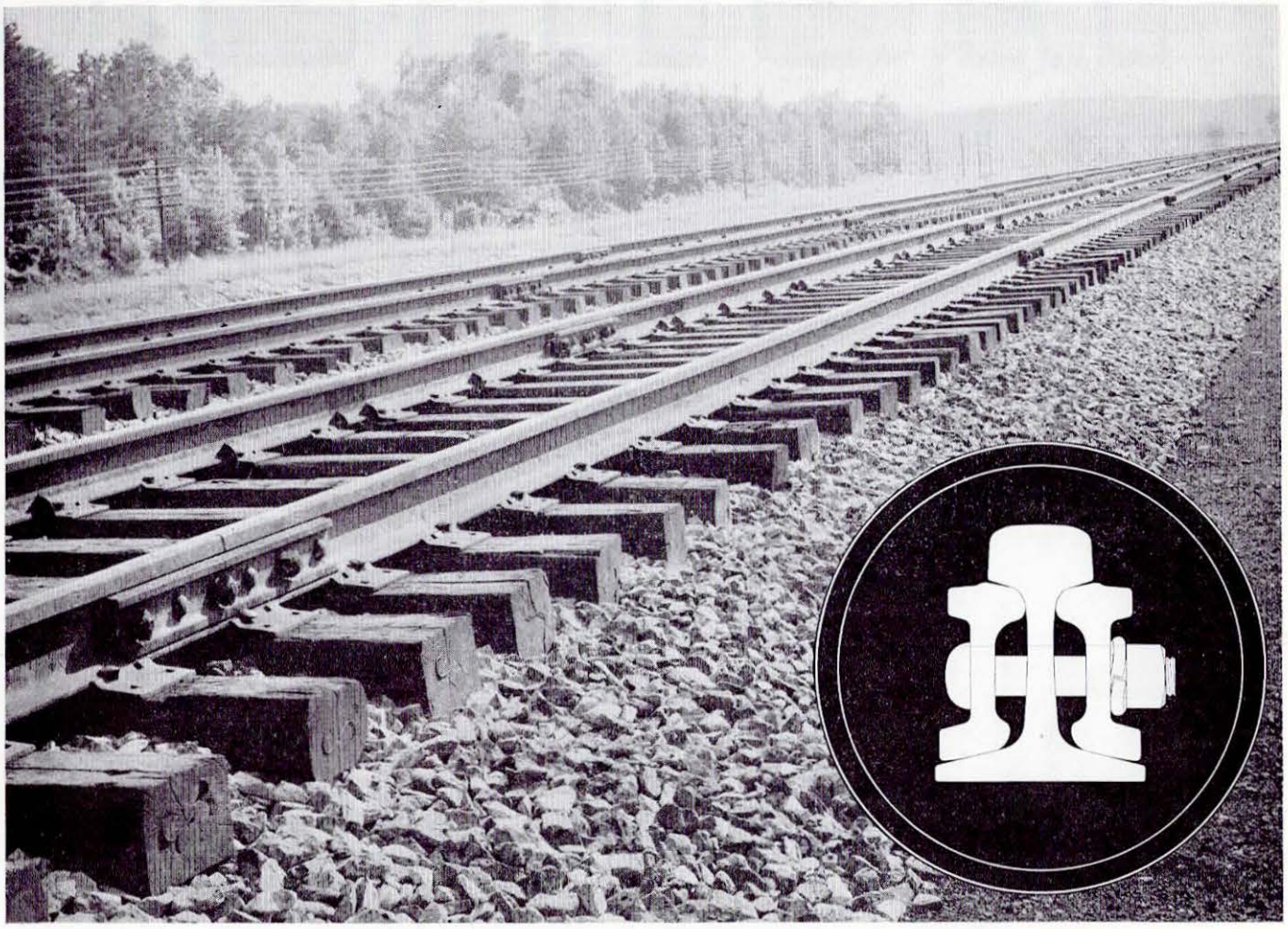


Pullman-Standard
CAR MANUFACTURING COMPANY

CHICAGO • NEW YORK
CLEVELAND • WASHINGTON, D. C.
PITTSBURGH • BIRMINGHAM
WORCESTER, MASS.

SAN FRANCISCO SALES REPRESENTATIVE: MARK NOBLE

EXTRA STRENGTH
For Heavier Tonnage



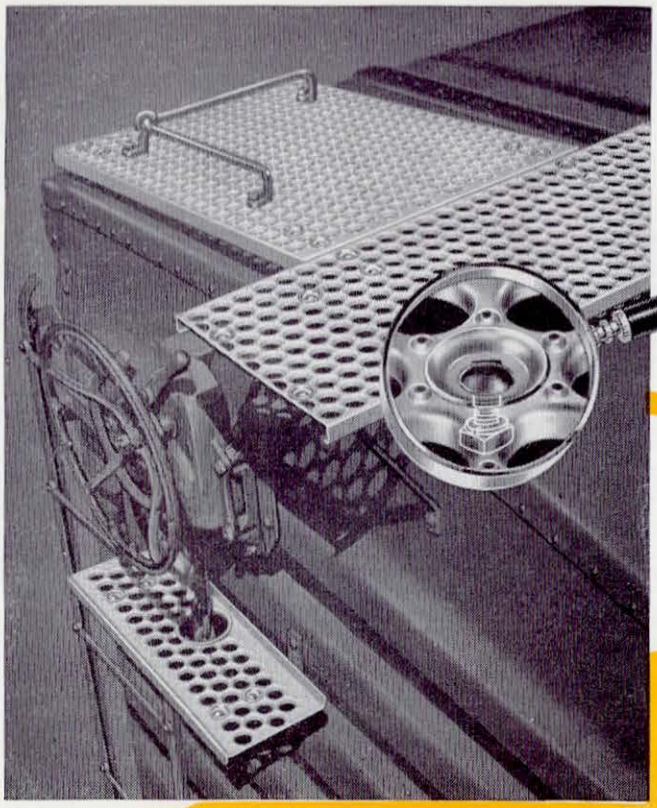
140 lb. rail on the Richmond, Fredericksburg & Potomac

Longer Rail Life

Lower Maintenance Cost

THE RAIL JOINT COMPANY Inc.
50 CHURCH ST. NEW YORK 7, N. Y.

MORTON



...for Safety and Savings

MORTON OPEN-GRIP RUNNING BOARDS AND BRAKE STEPS

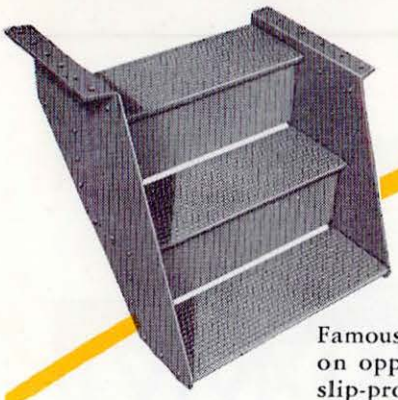
Here's Safe, Sure Footing in All Weather. Guaranteed to Last the Lifetime of the Car.

Morton Open-Grip is *engineered* for safety, easy application, and trouble-free long life. Self-cleaning open construction prevents the accumulation of snow, ice, mud, and corrosives —saves weight. And the large, rounded-edge holes also constitute a welcome emergency hand-grip.

Secure footing, *unaffected by frost,* is provided by non-dulling Kass Safety Buttons which resist slippage equally well in all directions, and are automatically *kept sharp* by wear. And, because the average foot is always supported by seventeen, or more, of these buttons, trainmen enjoy the utmost in confidence and comfort.

Open-Grip is *die-formed* in many sizes and shapes from a single piece of copper-bearing steel hot-dip galvanized. It has no seams, joints, slots, or welds. Cup-and-bolt attachment requires neither special tools nor precision work for permanent application. *Ideal* for new cars and old, and for many special uses.

This footboard for a Diesel switcher, made from Morton Open-Grip, illustrates how perforation margins may be varied to suit requirements, and solid areas "anti-slipped" with Kass Safety Buttons.



MORTON KASS SAFETY TREAD

Famous, *non-dulling* Kass Safety Buttons (see magnified view on opposite page), closely spaced in staggered rows for slip-proofing danger areas. Fabricated from mild steel, stainless or other alloys, or aluminum, and made in virtually any shape with blank margins as desired. Morton caboose step, left, shows a typical application. Also available with raised buttons but *not perforated* (Morton Kass Safety Matting) for Diesel floor plates and other uses. Sizes to 36″ x 120″.

MORTON HOLLOW METAL DOORS

Doors for Diesel switchers and line locomotives in all types and sizes. Morton construction provides rigidity, strength, and durability without unnecessary weight. Furnished *with or without* hardware in many standard styles, or designed for your special requirements. And, for multiple-unit Diesels, specify Morton high-quality diaphragms.

in Modern Freight Equipment

With the accent today on safety and savings, Morton products and Morton quality are now *more important* than ever. Top efficiency and proved economy, together—*in every element*—mean dependability and low-cost operation.

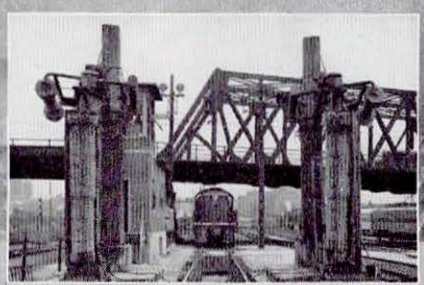
That's why so many railroads and private car owners are looking more and more to Morton. Whether you're planning new equipment—or reconditioning the old—it will pay you, *too,* to investigate.

Write for Costs and Specification Sheets

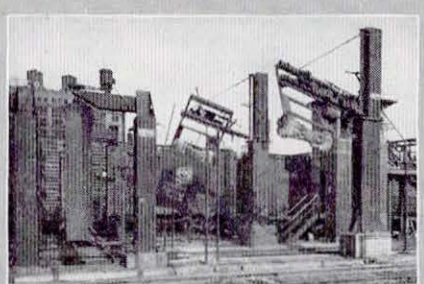
MORTON MANUFACTURING COMPANY
5125 West Lake Street, Chicago 44, Illinois
SALES OFFICES — New York, St. Louis, St. Paul, Washington, D. C., San Francisco, Louisville, Montreal.

WASH THE ROOFS TOO
with a WHITING TRAIN WASHER

(*Photographs Courtesy Santa Fe Railway*)



Whiting Car Washer with roof brushes swung aside ready for next train.



Side view of Whiting Car Washer showing brushes in retracted position.

EVEN the accumulated dirt in roof corrugations cannot escape the probing brushes of the Whiting Train Washer. Notice how snugly the washer brushes fit the contours of the streamlined coach pictured above.

It is equipped with retractable roof brushes that can be moved either up or down, or completely away from the washing track. It operates at speeds up to 80 feet per minute. It reduces lay-up time, eliminates old-fashioned washing methods, and saves money.

Single- and multiple-unit washer installations are available for handling coaches, tenders, and locomotives. The roof brush unit may be added readily to any existing installations. Write today for Whiting Bulletin CWC-402.

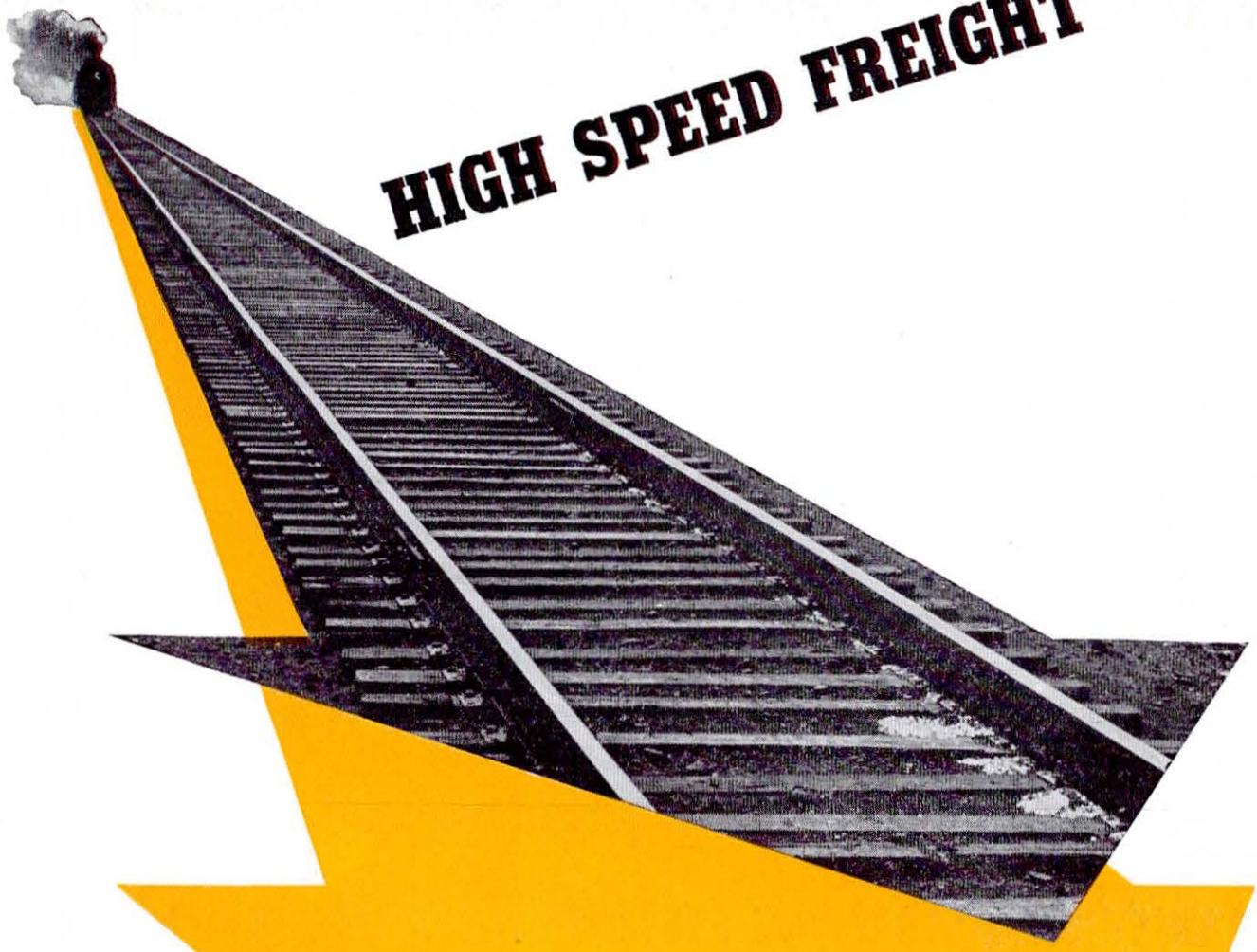
WHITING
CORPORATION

15603 Lathrop Avenue, Harvey, Illinois

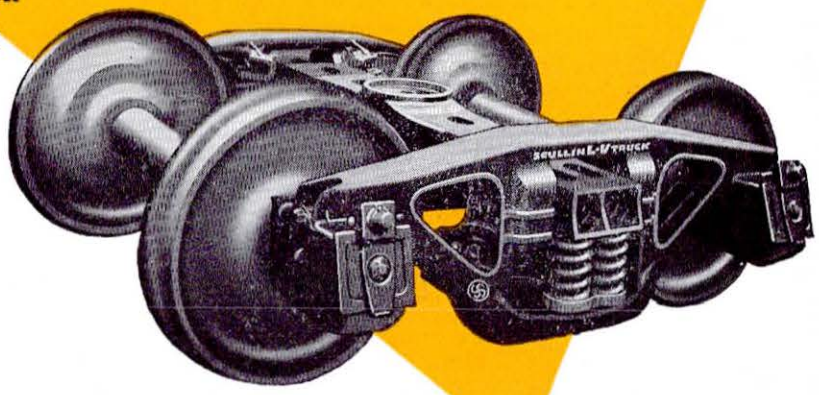
RAILROAD MAINTENANCE EQUIPMENT

Offices in Chicago, Cincinnati, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, and St. Louis. Agents in other principal cities. Canadian Subsidiary: Whiting Corporation (Canada) Ltd., Toronto, Ontario. Export Department: 30 Church Street, New York 7, N. Y.

HIGH SPEED FREIGHT



safely cushioned from both
lateral and vertical shocks
by...



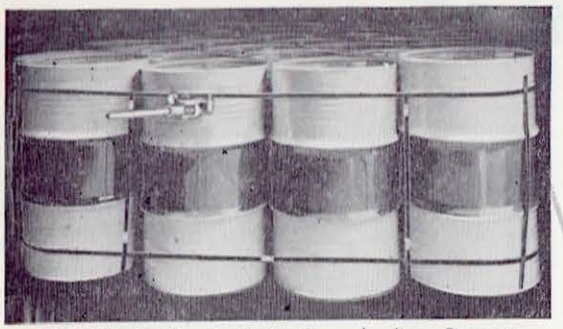
SCULLIN L-V TRUCKS
LATERAL VERTICAL CUSHIONED MOTION

Compare first cost
and maintenance
...you'll agree on L-V!

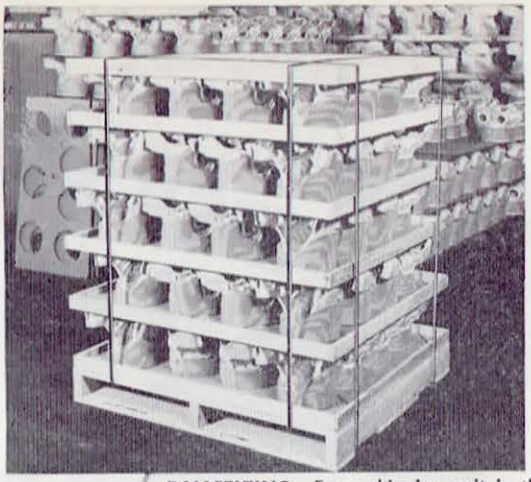
50 YEARS' PROGRESS

SCULLIN STEEL CO.
SAINT LOUIS 10, MISSOURI

NEW YORK • CHICAGO • CLEVELAND • BALTIMORE • RICHMOND, VA. • MEXICO CITY, D. F.



CAR BANDING—For fast, safe car loading. Prevents damage—reduces bracing costs—saves loading time. Replaces heavy, bulky wood bracing.

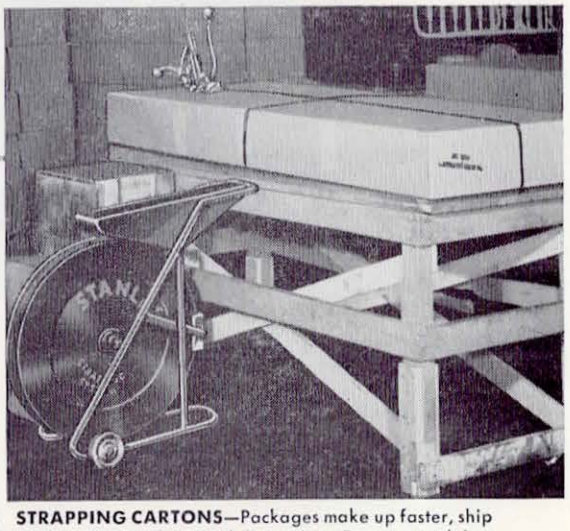


PALLETIZING—Every shipping unit is the same efficient size when small packages or loose parts are palletized, as these airplane engine parts.

Whatever you ship--

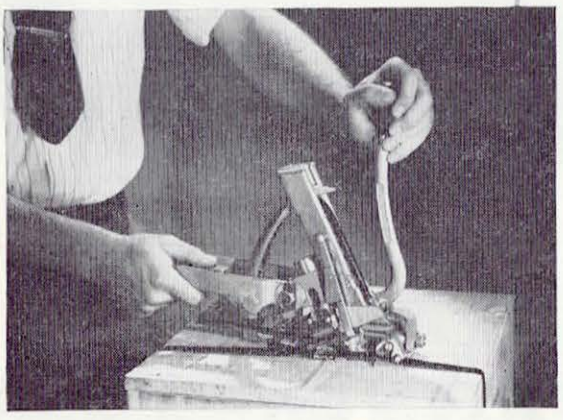
SAVE MAN-HOURS, MATERIALS AND SHIPPING COSTS *with* STANLEY STEEL STRAPPING SYSTEM!

The combination of Stanley Steel Strapping and the new improved "ACE" Strapping Tool speeds goods out of the shipping room—gets them to their destination in better condition—saves man-hours, materials and shipping costs. The Stanley Steel Strapping System includes tools, reels and accessories for all applications. Write for folder now. The Stanley Works, Steel Strapping Division, 251 Lake St., New Britain, Conn.



STRAPPING CARTONS—Packages make up faster, ship better with Stanley Steel Strapping. Fewer complaints and adjustments because of damage. Less wasted motion.

STRAPPING BALES—Bolts of cloth are strapped together into one easy-to-handle, low rate package. Just 5 seconds per strap to complete entire operation.



STRAPPING BOXES—Your boxes are stronger, safer when you use Stanley Steel Strapping. Just 4 quick motions with "ACE" Strapping Tool gives you a sturdy, easy-to-handle package.

STANLEY

Reg. U. S. Pat. Off.

HARDWARE • HAND TOOLS • ELECTRIC TOOLS • STEEL STRAPPING

The Answer to 35,000 Problems a Day...

Commuter service — to the tune of 35,000 single trips per day — has long posed a money-losing problem for The Central R. R. Company of New Jersey. In contrast to its freight operation with 65 separate interchange connections with other railroads, the 250 daily passenger trains have not paid their way for many years.

THAT'S WHY the decision to "dieselize" was a natural —

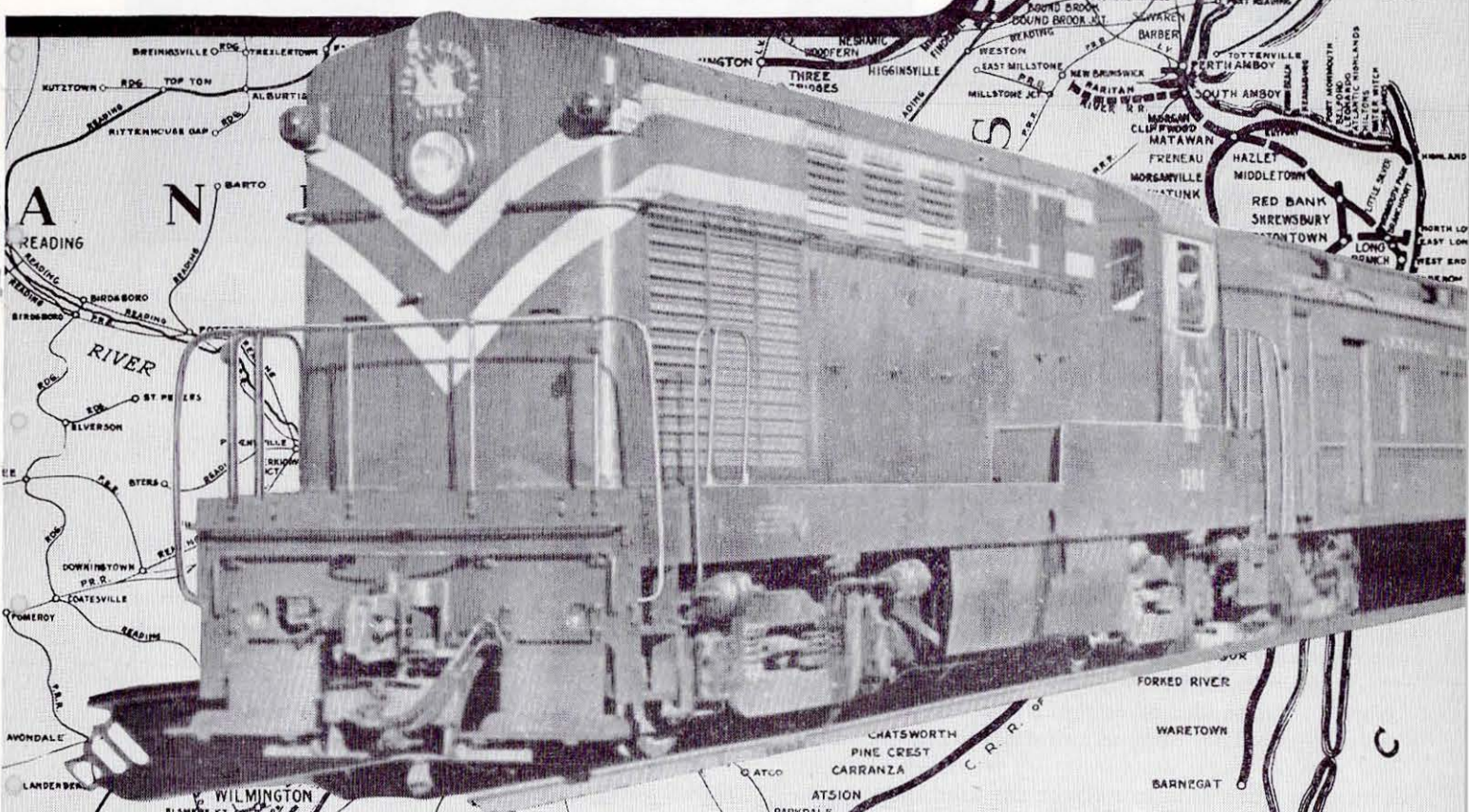
THAT'S WHY fourteen of these 1500 hp. all-purpose Fairbanks-Morse locomotives have been purchased —

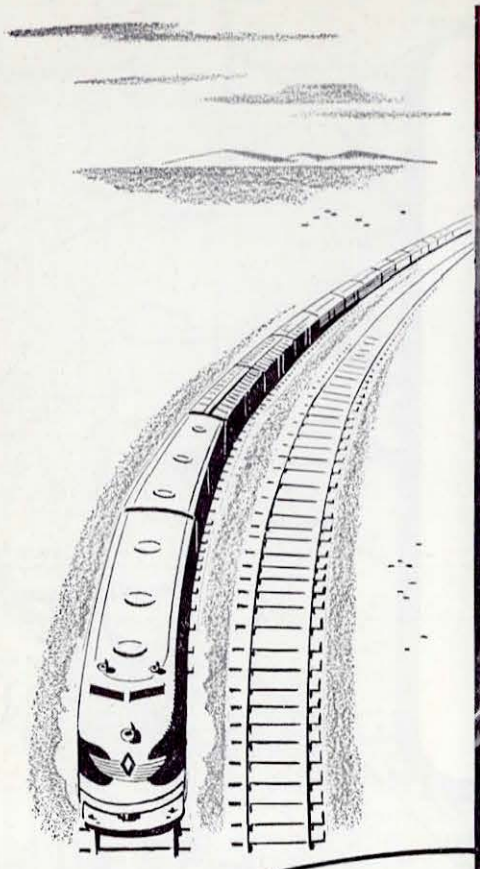
AND *THAT'S* WHY losses on the Central's passenger service are being reduced — and commuters are enjoying the finest in clean, reliable transportation. Fairbanks, Morse & Co., Chicago 5, Ill.

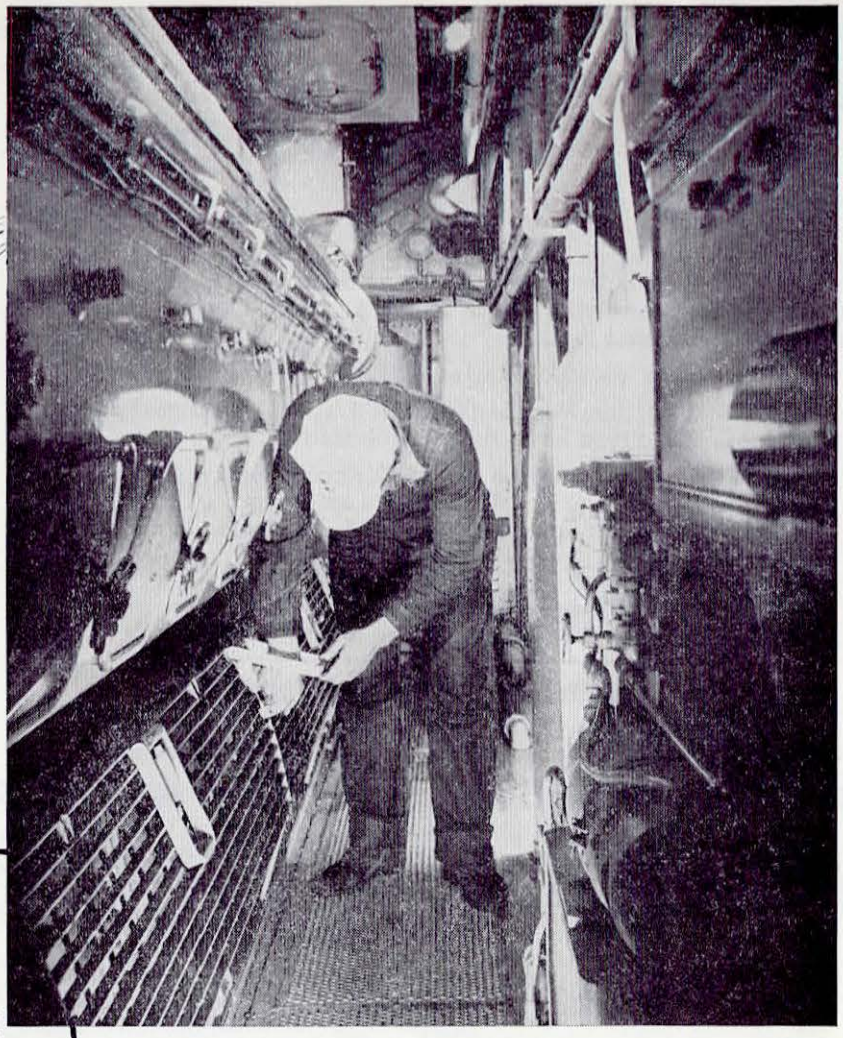
FAIRBANKS-MORSE

A name worth remembering

DIESEL LOCOMOTIVES • DIESEL ENGINES • PUMPS • SCALES • MOTORS • GENERATORS
STOKERS • RAILROAD MOTOR CARS and STANDPIPES • FARM EQUIPMENT • MAGNETOS







DEPENDABLE PERFORMANCE DAY AFTER DAY . . . *Actually at Lower Cost!*

● Here are two profit-producing advantages to expect when you use alloy steels for vital working parts in Diesel engines, like that shown above—or in steam locomotives:

1. DEPENDABLE PERFORMANCE. Alloy steels are exceptionally high in strength and toughness. They carry heavy loads. They withstand severe shock, strain, vibration and sudden reversal of stress. They stubbornly resist fatigue. They respond uniformly to heat treatment and produce hard, wear-resisting working surfaces. Thus, they are able to deliver the kind of performance that keeps equipment on the road day after day.

2. LOWER COST. While alloy steels may be slightly higher in first cost, they actually cost less in the long run. Useful road time of equipment is extended. Repair and replacement costs drop. The net result —LOWER END COSTS.

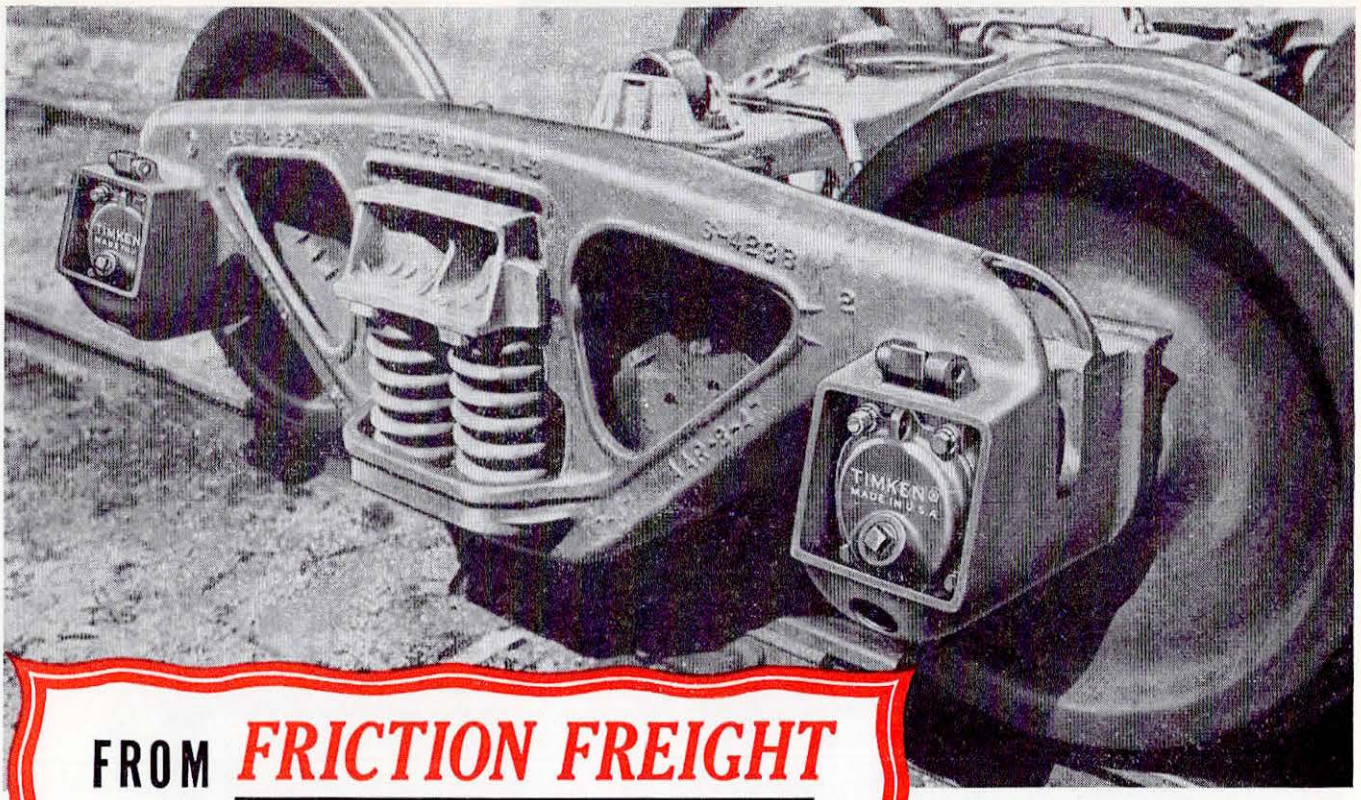
As the world's leader in alloy steel making, Republic is ready to help you get best results from these steels in gears, shafts, axles, bearings, valves, studs, slides and other working parts. Write us.

REPUBLIC STEEL CORPORATION
Alloy Steel Division • Massillon, Ohio
GENERAL OFFICES, CLEVELAND 1, OHIO
Export Dept.: Chrysler Bldg., New York 17, N. Y

Republic **ALLOY STEELS**

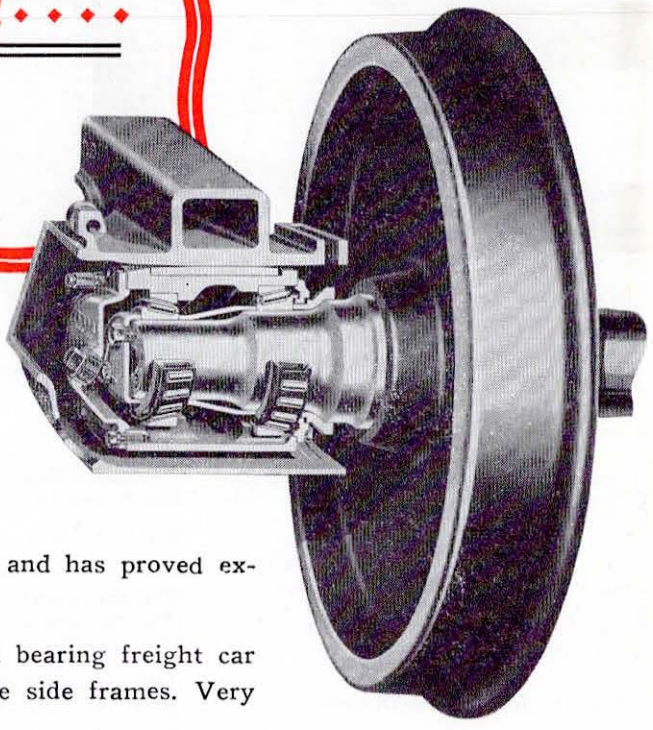
REPUBLIC STEEL

Other Republic Products include Stainless, High Strength and Carbon Steels—Sheets—Plates—Pipe—Bolts, Nuts and Rivets—Boiler Tubes



FROM *FRICTION FREIGHT* TO *ROLLER FREIGHT....*

WITH EXISTING STANDARD TRUCKS



Why deny yourself the operating advantages and economies of roller freight when you can convert your existing friction bearing freight car trucks to Timken roller bearing trucks quickly at moderate cost?

The application shown in the photographs first was used under 800 Union Pacific livestock cars and has proved extremely satisfactory in service.

It can be applied to any A.A.R. standard friction bearing freight car truck having journal boxes cast integral with the side frames. Very little truck frame modification necessary.

Give your existing friction freight cars a new lease of life and increase their earning power with this roller freight conversion unit. Write for further information.

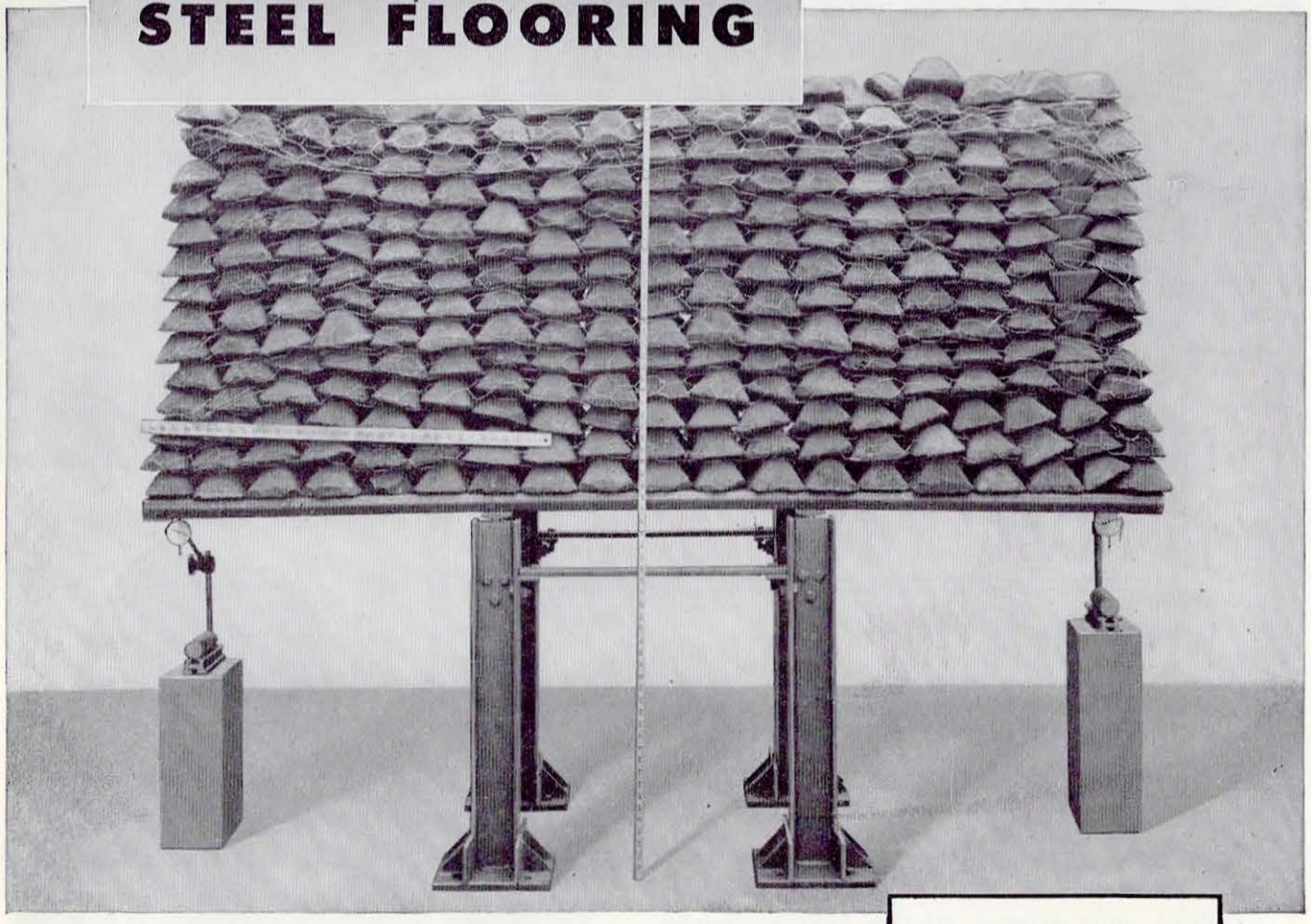
TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
RAILWAY ROLLER BEARINGS

THE TIMKEN ROLLER BEARING COMPANY, CANTON 6, OHIO
CABLE ADDRESS "TIMROSCO"

NOT JUST A BALL NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION

STOP DANGEROUS AND COSTLY BOXCAR FLOOR BREAK-THROUGH WITH NAILABLE STEEL FLOORING

In Detroit Testing Laboratory test to determine cantilever strength, 11,000 lbs. of pig iron were loaded on a panel consisting of three NAILABLE STEEL FLOORING boxcar channels welded side by side. The cantilever span was 30". Under this floor load of 733 pounds per square foot—far in excess of heaviest freight loading—the NAILABLE STEEL FLOORING section *hadn't even reached the yield point.*



In actual use as well as in laboratory tests it has been proved that NAILABLE STEEL FLOORING can't break through under *any* kind of heavy freight. Boxcars with NAILABLE STEEL FLOORING have safely hauled heavy copper cakes, automobile engines, highly concentrated loads of sheet steel and tinplate as well as hundreds of other commodities.

No Fork Truck Break-Throughs Either

NAILABLE STEEL FLOORING supports the biggest fork trucks, too, which so often break through conventional floors. For example, 23 cars are spotted each day at the Wabash Railroad's Ford Loading Dock in Detroit. Although they're all new or recently rebuilt, an average of *five* or *six* cars per day come in with large holes somewhere throughout the length of the floor where fork trucks have broken through.

Durability Means Low Maintenance . . . Low Operating Costs

NAILABLE STEEL FLOORING stops the break-throughs—and a good many other common floor troubles. It isn't chewed up by pinch bars or rough freight. Although nails are tightly clinched, they don't tear, splinter or deform the floor. All this adds up to lower maintenance costs — and lower operating costs as well. When floors stay in good condition for all types of freight, cars require less switching and empty movement.

To eliminate dangerous break-throughs and reduce maintenance costs, specify NAILABLE STEEL FLOORING for the next boxcars you build or rebuild.

"Many delays and potential accidents have occurred and are continuing to occur, due to pig iron, lead, copper bars and similar commodities breaking through boxcar floors . . . this condition . . . is due to the type of equipment selected for this type of loading." (Car Department Officers Association Report by Committee on Preparation of Freight Cars, September 20, 1948)

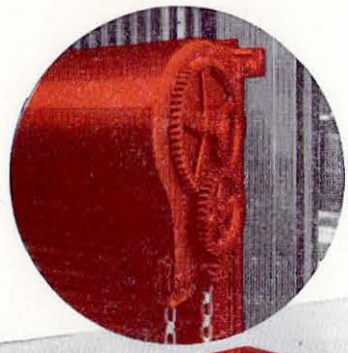
NAILABLE STEEL FLOORING
A GREAT LAKES STEEL PRODUCT

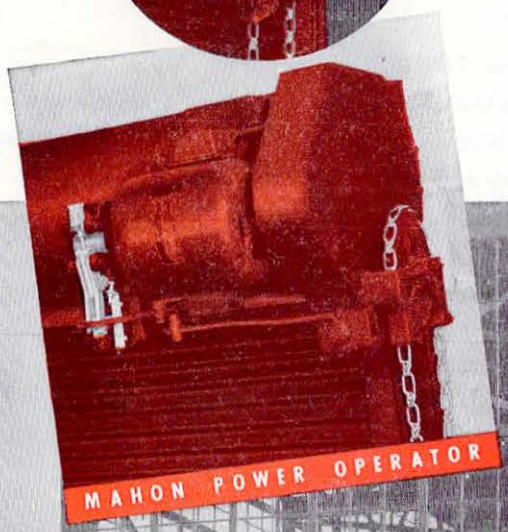
GREAT LAKES STEEL CORPORATION

Steel Floor Division • 3576 Penobscot Building • Detroit 26, Michigan

UNIT OF NATIONAL STEEL CORPORATION

Rolling Steel DOORS





Manually • Mechanically • Power Operated

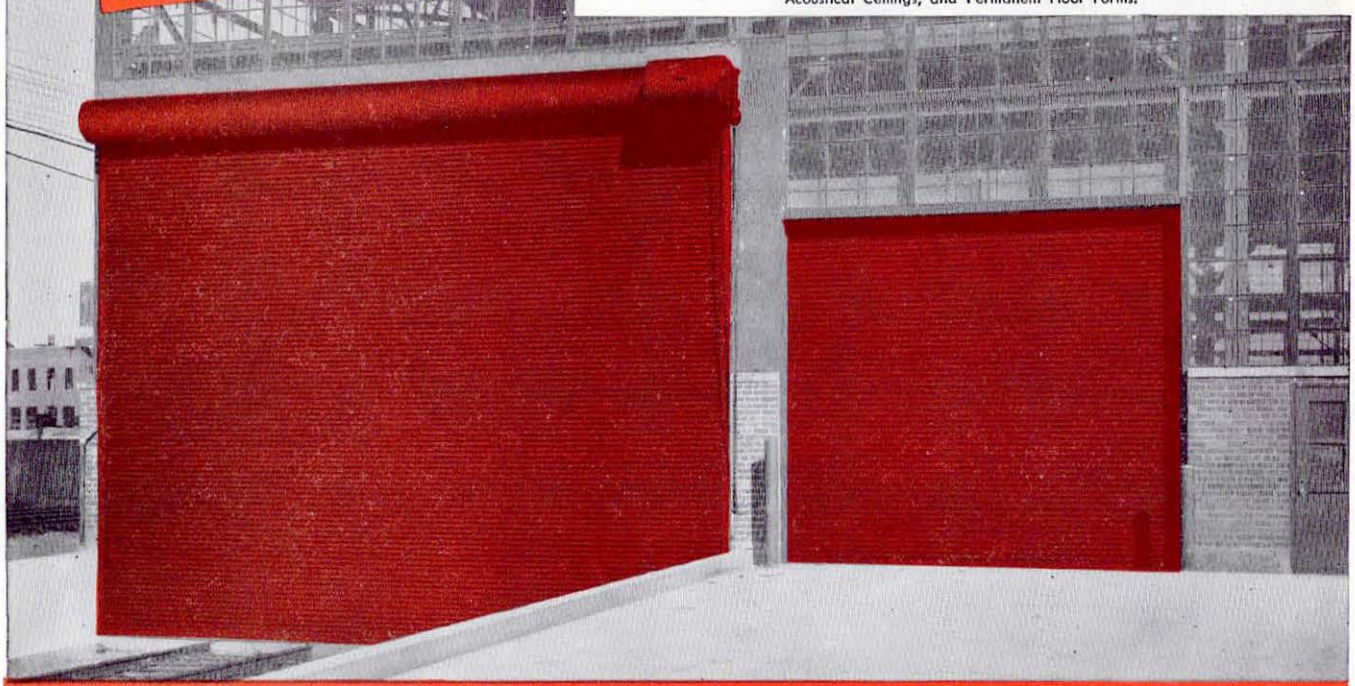
When you are in the market for a door that will provide the greatest economy of space—both inside and outside of the opening, the greatest protection, the greatest convenience and dependability in operation, and the greatest number of years of continuous trouble-free service, you will find these most desirable features in the greatest measure in a good rolling steel door. When you specify Mahon Rooling Steel Doors, you are assured the latest developments in doors of this type . . . you get exclusive operating features which continue to gain favor for Mahon Rolling Steel Doors with architects and owners alike throughout the country. See Sweet's File for detailed information and complete specifications.

THE R. C. MAHON COMPANY

Detroit 11, Michigan • Western Sales Division, Chicago 4, Illinois

Representatives in All Principal Cities

Manufacturers of Rolling Steel Doors, Grilles, and Underwriters' Labeled Rolling Steel Doors and Fire Shutters. Mahon Steel Deck for Roofs, Partitions, Acoustical Ceilings, and Permanent Floor Forms.



ROLLING STEEL DOORS, SHUTTERS AND GRILLES TO MEET EVERY REQUIREMENT

Two of nine Mahon Rolling Steel Doors installed in a new plant for Production Steel Company, Detroit, Mich. Barton-Marlow Co., General Contractors.

MAHON

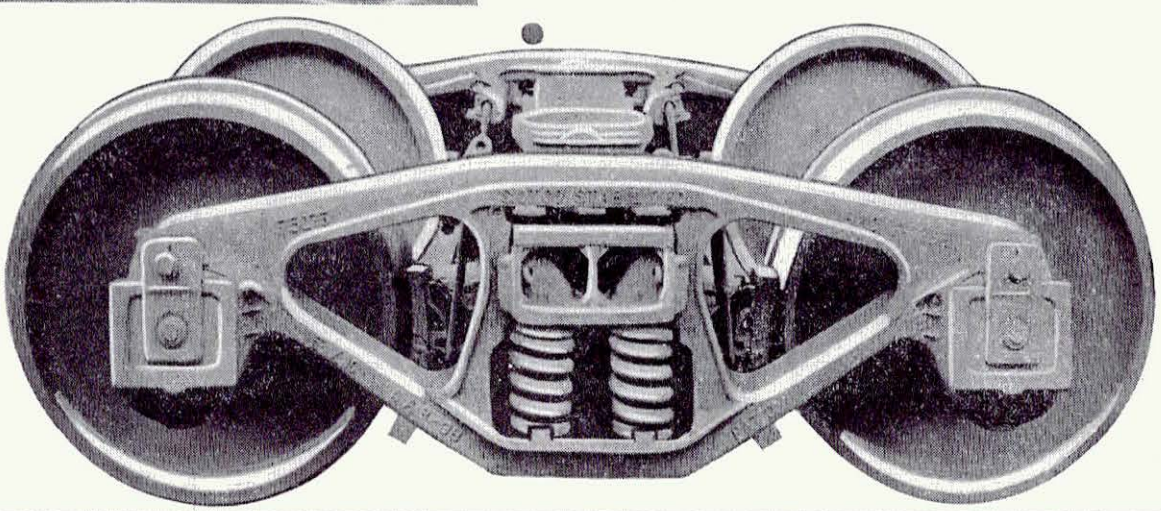
l o n g e r SPRINGS

BARBER STABILIZED TRUCKS

Back in 1939 it was apparent that the constant demand for higher train speeds would create a demand for l-o-n-g-e-r Bolster Springs to cushion and absorb the greater road shocks which would be encountered.

At that time, pioneering studies and tests on l-o-n-g-e-r springs were started by this Company, resulting in the development of Barber Trucks for springs having up to 3 13/16" travel or more, with the necessary stabilizing combination to control their greater movements.

1 Special Alloy-Iron friction casting having 35 square inches of friction-bearing surface.
2 Spring-steel wear plate securely bolted or welded to the column.
3 Friction-casting-supporting side-spring having a minimum 3/4" initial compression.

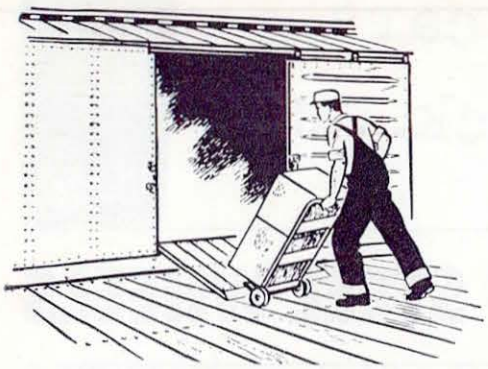


8174

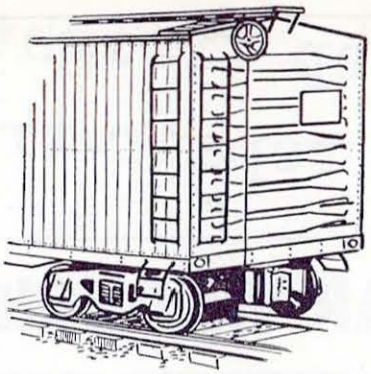
STANDARD CAR TRUCK COMPANY
332 SOUTH MICHIGAN AVENUE, CHICAGO, ILLINOIS

THE BEST BOLT YOU CAN BUY...

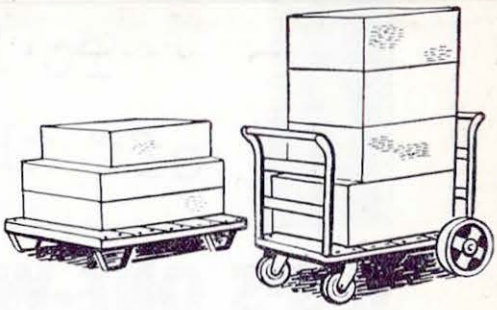
for Loading Platforms



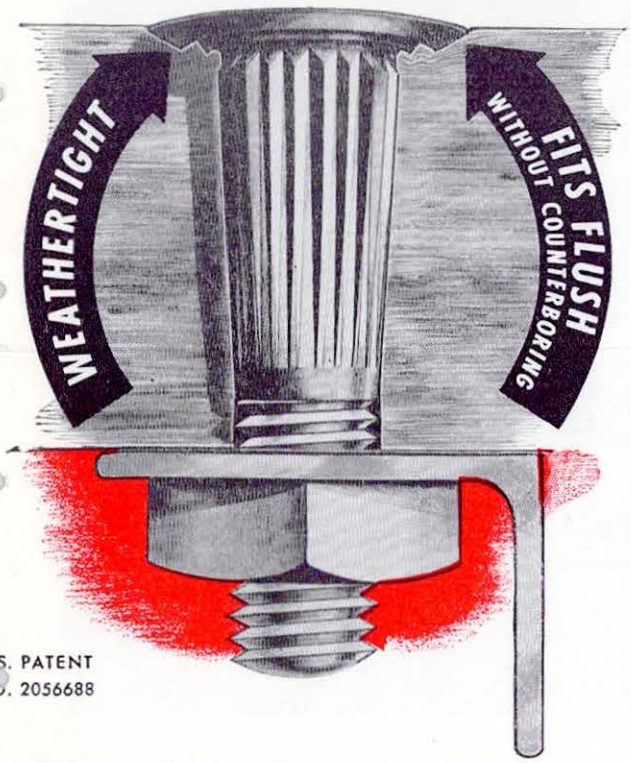
for Freight Cars



for Skids and Hand Trucks



FOR ALL WOOD FASTENING NEEDS!



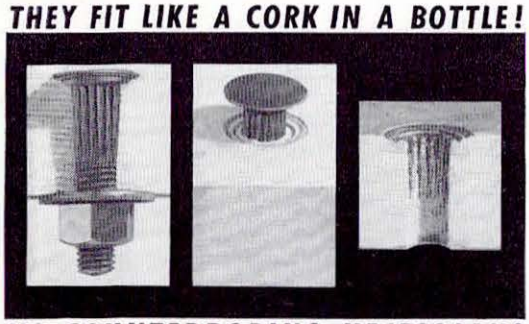
U.S. PATENT NO. 2056688

LAMSON *Weather-tight* BOLTS

Modern railroaders have long since discovered that the patented Lamson Weather-tight Bolt is the *one* bolt for wood that seals out moisture, inhibits rotting and hugs the wood surface so that no clumsy bolt heads protrude. Concentric rings under the head and tapered splines down the shank evenly compress the wood and give a super-tight fit like "a cork in a bottle."

Platforms, car floors, skids, trucks, cat-walks and other wooden structures last years longer when fastened with Lamson Weather-tight Bolts. Specify Lamson Weather-tight Bolts next time and see how much better they do the job! Specify them *every time!*

THEY FIT LIKE A CORK IN A BOTTLE!



NO COUNTERBORING NECESSARY!

RAILROAD SALES DEPARTMENT

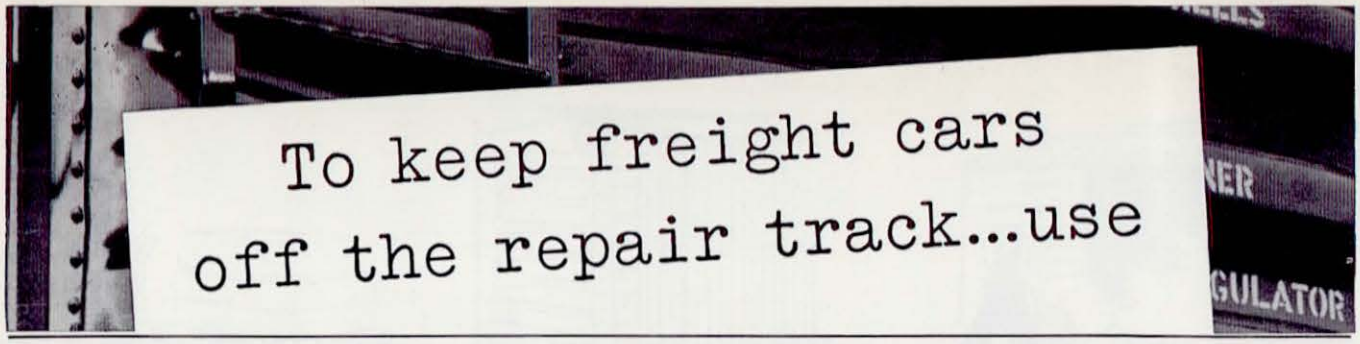
THE LAMSON & SESSIONS COMPANY

General Offices: 1971 West 85th St. • Cleveland 2, Ohio

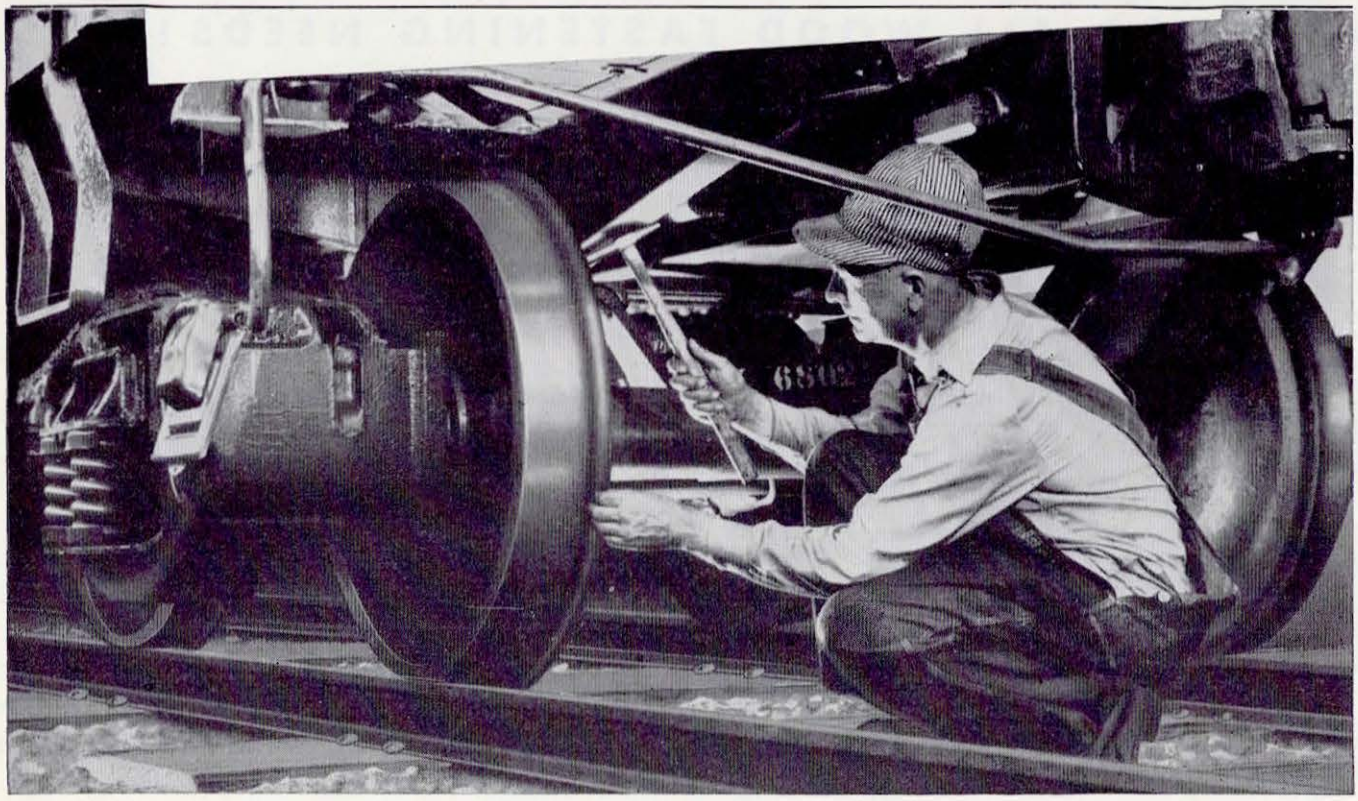
Plants at Cleveland and Kent, Ohio • Birmingham • Chicago

Lamson & Sessions

FASTENERS THAT KEEP PACE WITH RAILROAD PROGRESS



U·S·S ONE-WEAR WROUGHT STEEL WHEELS



WHEREVER One-Wear Wrought Steel Wheels have been adopted, delays due to wheel failures have been sharply reduced. One-Wear Wrought Steel Wheels endure heavy braking action and impact at high speeds. Freight cars remain in service longer without wheel change, resulting in more revenue.

Wrought Steel Wheels are light . . . save 1,400 pounds per car . . . reduce unsprung weight by 12%, keeping down track maintenance and adding extra loading capacity.

There are over 2,000,000 One-Wear Wrought Steel Wheels in freight service and records show that they average more than 200,000 miles under 50/55-ton service . . . over 160,000 under 70-ton service. Many wheels have passed 300,000 miles, some 400,000 miles, before being condemned. On the basis of cost per thousand miles, U·S·S One-Wear Wrought Steel Wheels average substantially less in cost.

. . .

Although we are maintaining maximum production of wrought steel wheels and axles, we are still unable to meet fully the present tremendous demand. We are doing everything in our power, however, to take care of your needs as soon as it is humanly possible to do so.

CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH & CHICAGO
COLUMBIA STEEL COMPANY, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM, SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY NEW YORK

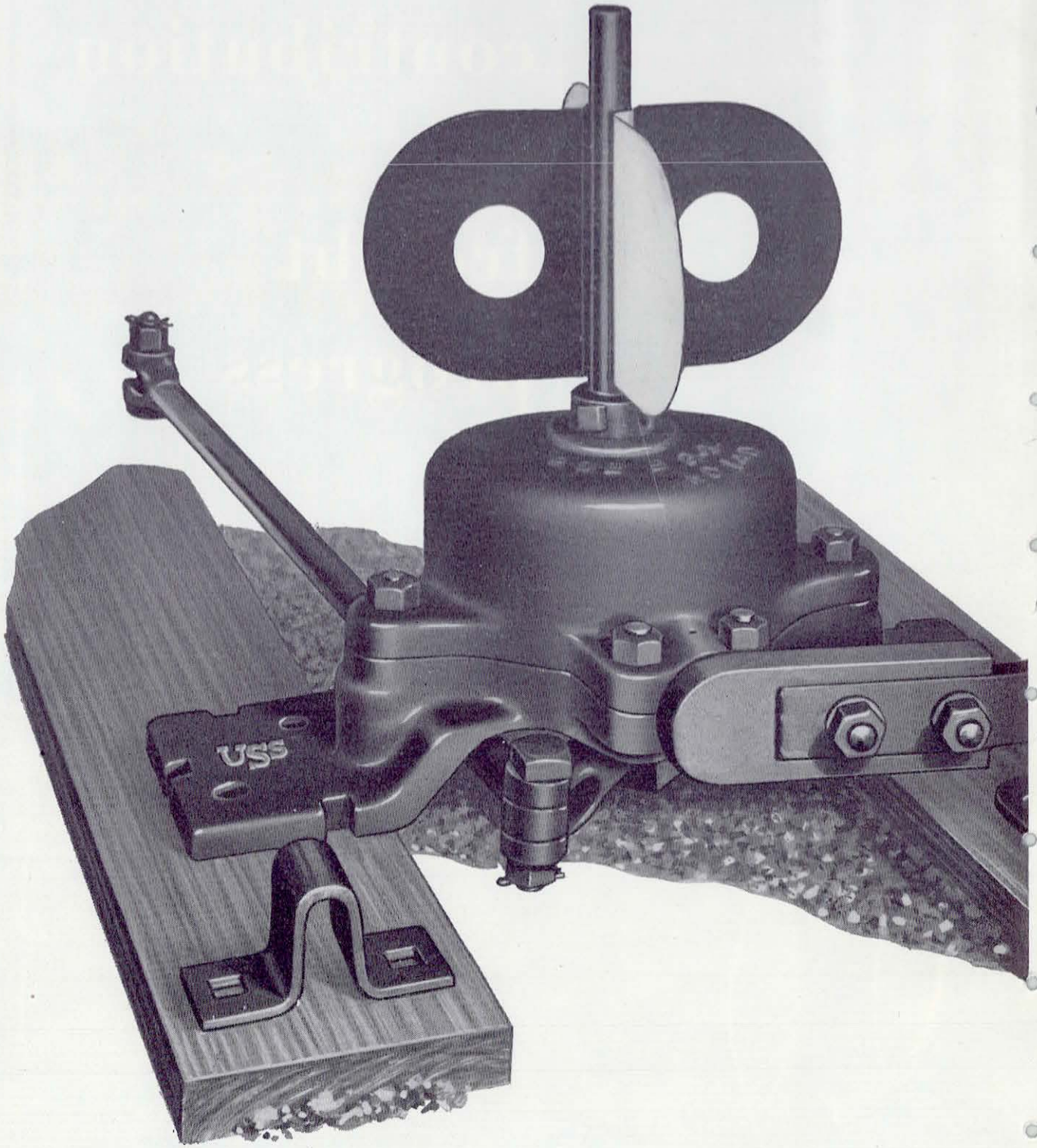
8-1152

UNITED STATES STEEL

our greatest contribution to freight progress

MINER CLASS A-22-XL GEAR

An Improved

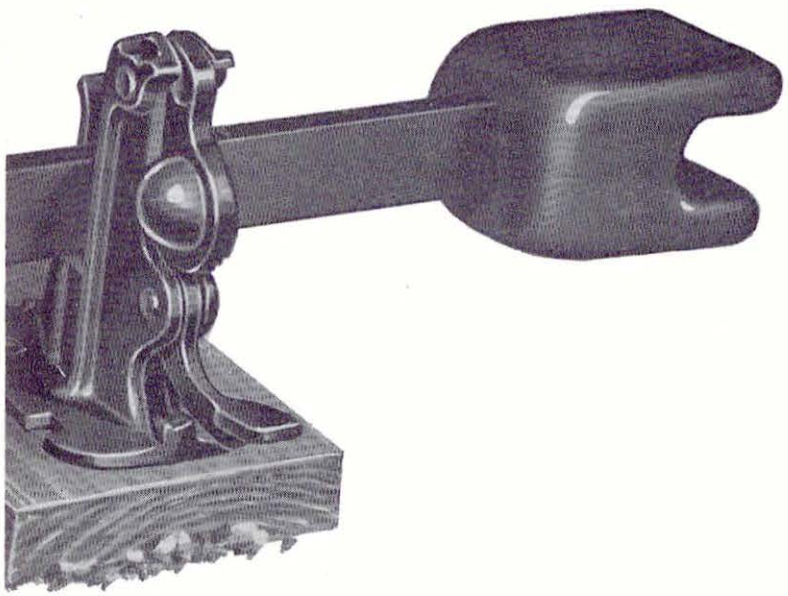


UNITED STATES STEEL

Switch Stand

for more efficient switching

Modern design assures quick, simple operation of yard and main line switches



● Here is a switch stand consistent in design and quality with present day trackwork standards.

Conforming to A.R.E.A. specifications for ground throw switch stands, the U·S·S No. 140 switch stand provides dependable service for either main line or yard use.

Its large bearings reduce wear to a minimum and prevent wobble of targets and lamps. The hand lever socket and pinion are integral with the connecting shaft, keeping the lever and pinion firm at all times on the bearing shaft.

The U·S·S No. 140 stand can be furnished in a variety of assemblies, so that you may specify the arrangement which best fits your needs. Red and white targets are standard, but any color or pattern can be supplied.

For additional information, write to Carnegie-Illinois Steel Corporation, Pittsburgh 30, Pa.

USS

CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH & CHICAGO
COLUMBIA STEEL COMPANY, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM, SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

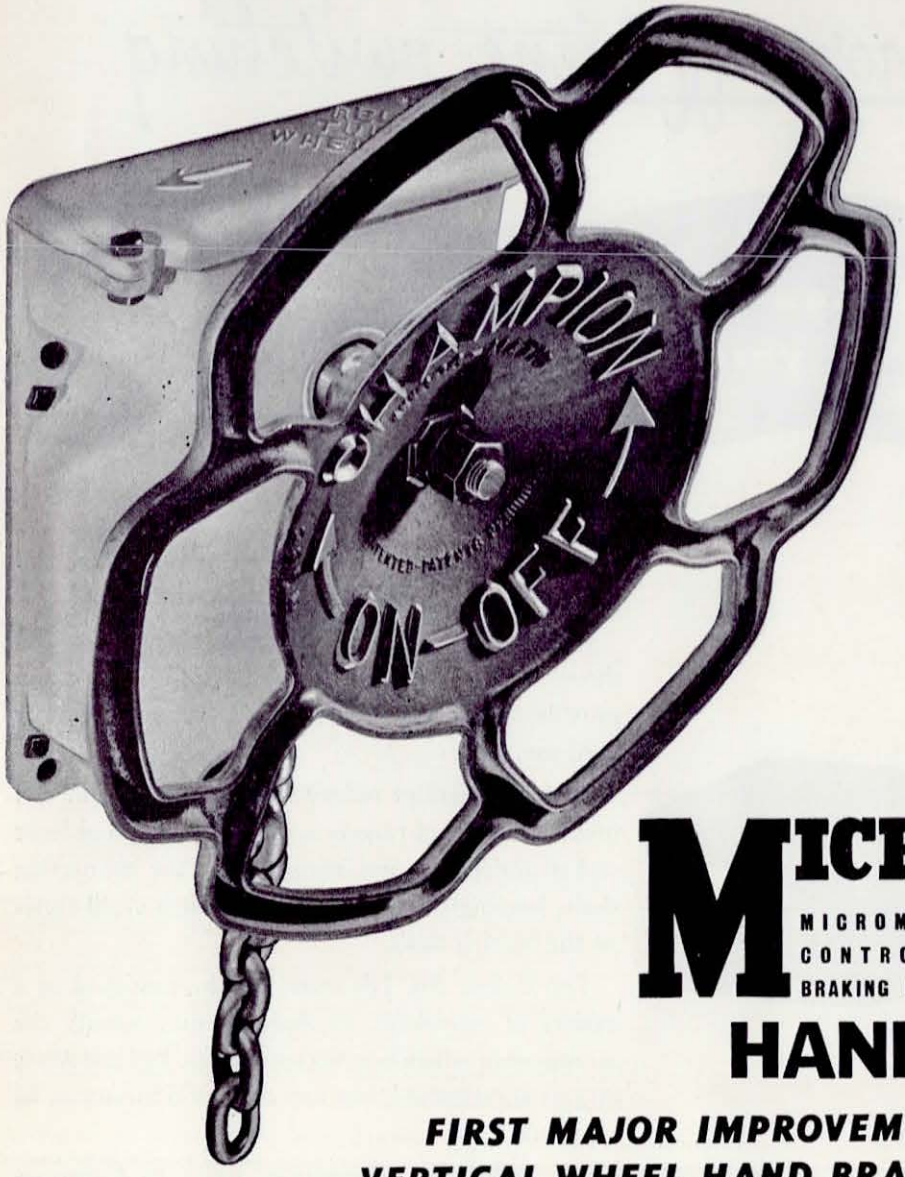
8-1386

UNITED STATES STEEL

CHAMPION MICRO-MATIC HAND BRAKE

TRULY A *ONE-HAND* HAND BRAKE

SAFETY— NO SPINNING HAND WHEEL



IN SERVICE
SINCE 1940

THE **ORME** CO.
CHAMPION BRAKE DIVISION
721 W. 6th STREET
MICHIGAN CITY, INDIANA
RAILWAY EXCHANGE BUILDING
CHICAGO

MICRO-MATIC

MICROMETER CONTROL OF BRAKING POWER.

AUTOMATIC HOLDING OF BRAKING POWER.

HAND BRAKE

FIRST MAJOR IMPROVEMENT FOR SAFETY IN VERTICAL WHEEL HAND BRAKES IN OVER 15 YEARS

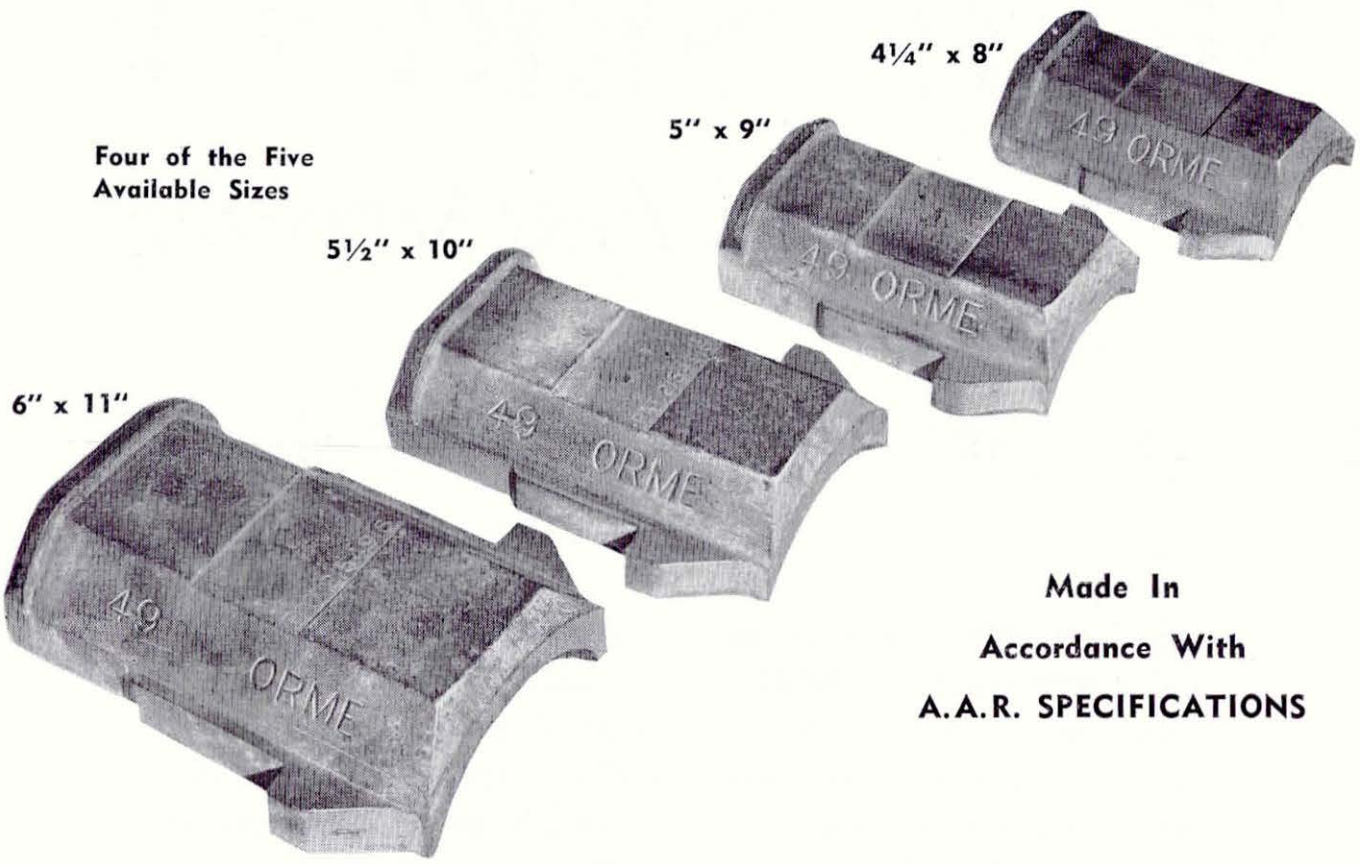
Scientific Design Creates NEW STANDARDS of SAFETY
CHAMPION MICRO-MATIC HAND BRAKE!

- Perfect control of car.
- Maximum braking power.
- Positive automatic holding.
- No levers to operate.
- Controlled by hand wheel only.
- Fast take-up. 2½ turns of hand wheel.
- Quick, fully-controlled release.
- No danger of damage to air equipment.
- Perfect grip hand wheel.
- Sealed-in Lubrication, and "Oil-lite" bearings.
- Tight fit bearings—vibration wear practically eliminated.
- Cover removable for inspection.

A.A.R. APPROVED AND CERTIFIED — CERTIFICATE NO. 2

THE ORME JOURNAL BEARINGS

Dependable for more than A Quarter Of A Century



Four of the Five Available Sizes

Made In Accordance With A.A.R. SPECIFICATIONS

- ECONOMICAL in first cost and in reclamation
- SIMPLE with no complicated parts to get out of order
- EASILY INSTALLED by unskilled labor anywhere
- LARGE BEARING AREA to insure long service life

THE ORME CO.

721 WEST 6th STREET, MICHIGAN CITY, INDIANA

RAILWAY EXCHANGE BUILDING, CHICAGO, ILLINOIS

They're Giving

MORE SERVICE

with Less Servicing

Diesel locomotives have rolled up an outstanding availability record over millions of miles. And the Harrison cooling equipment used on a majority of the nation's Diesel locomotives has helped make this record possible.

Sturdy, reliable Harrison Radiators are providing effective jacket water cooling under varying operating conditions; and Harrison Oil Coolers dependably maintain oil temperatures within the required range.

Together, they team up to keep Diesel locomotives on the job and out of the roundhouse.

HARRISON

RADIATORS • OIL COOLERS FOR DIESELS

HARRISON RADIATOR DIVISION OF **GENERAL MOTORS CORPORATION, LOCKPORT, N. Y.**

FRICTION SURFACES OF USS ABRASION RESISTING STEEL

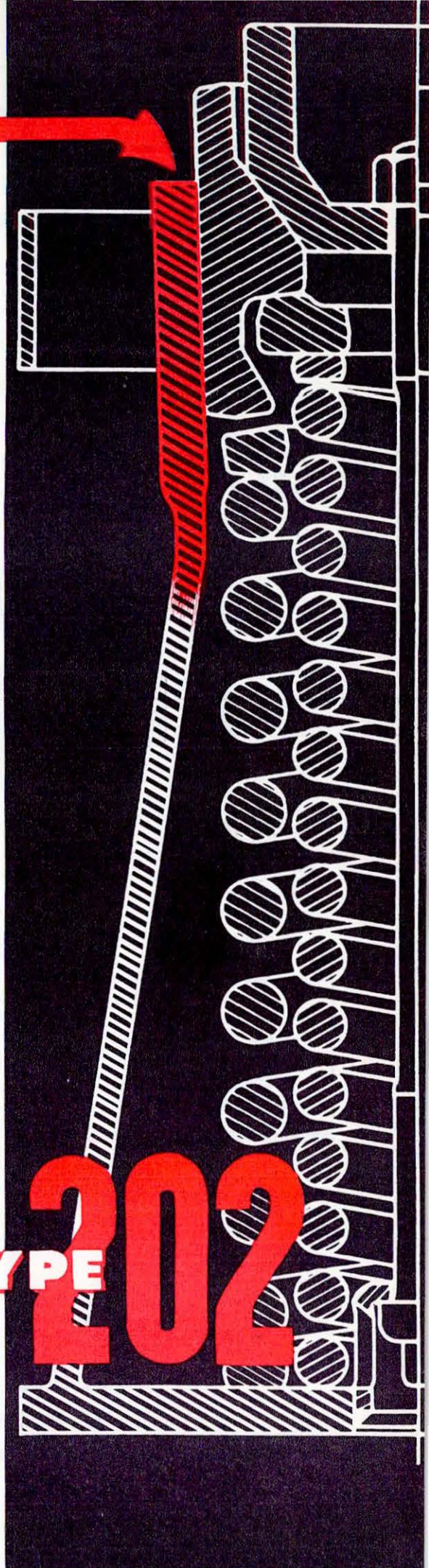
last longer

METALLURGISTS of the U. S. Steel Corporation worked for years to produce a special formula steel characterized by high abrasion resistance. The result was their trade marked Abrasion Resisting Steel. This steel is used for steam shovels, scrapers, bulldozer blades, and *it is the steel we use to build the housing of the Hulson 202 gear.*

This means that the throat of the housing, where most of the work and wear in a friction gear occurs, is of Abrasion Resisting Steel.

For long lasting *protection,* specify the A.A.R. Certified Hulson 202 gear of United States Steel Company's Abrasion Resisting Steel.

HULSON CO., 332 SO. MICHIGAN AVE., CHICAGO 4, ILL.



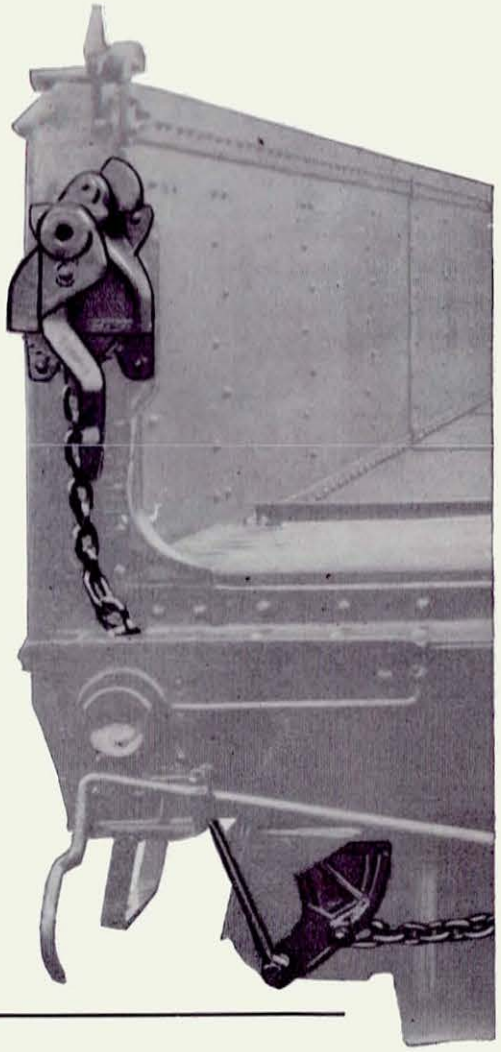
HULSON TYPE 202

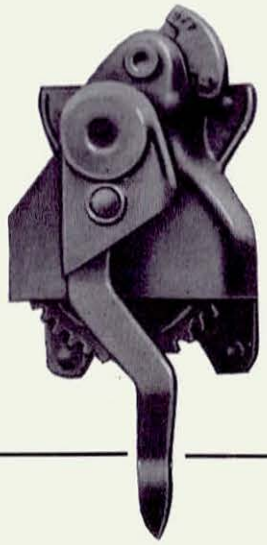
DRAFT GEAR

A·A·R CERTIFIED

EQUIPCO

PUMP-HANDLE BRAKE FOR DROP-END GONDOLA CARS





TYPE #3700

A. A. R. CERTIFIED

A. A. R. TYPE #3700

THE EQUIPO PUMP-HANDLE BRAKE

A drop-end gondola car requires a SPECIAL type of hand brake, to provide a SAFE operating position for the brakeman. The EQUIPO Pump-handle Brake is designed ESPECIALLY for this type of car.

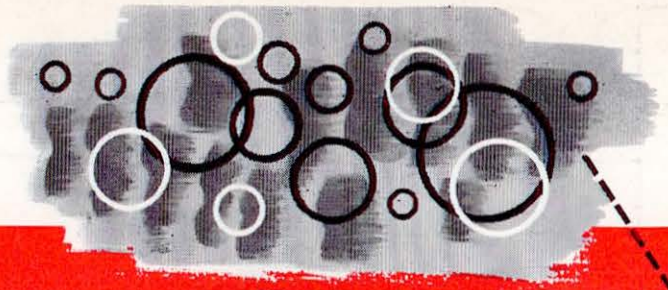
The EQUIPO brake enables the brakeman to stand, at all times, in a protected position within the sides of the car, where he has a firm footing on the brake platform. The EQUIPO brake is especially designed for application to the end face of the corner post, without mounting plates of any kind, resulting in low application cost. The operator not only stands in a SAFE, protected position but has ideal leverage to operate the brake without strain.

This hand brake meets all requirements of a SAFE hand brake and has been certified by the A. A. R.

EQUIPMENT SPECIALTIES DIVISION

of Union Asbestos and Rubber Company

332 South Michigan Ave. Chicago, Illinois



DEARBORN POLYAMIDE ANTI-FOAMS

Mean Greater Savings in Locomotive Operation

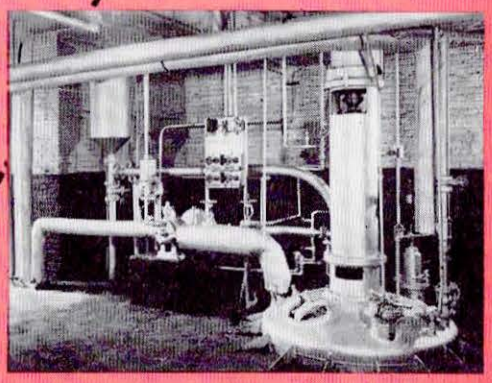
Dearborn improved Polyamide anti-foam compounds, highly efficient surface acting agents, maintain nucleate boiling under high heat input, providing maximum contact between water and heating surface, thereby improving heat transfer and increasing fuel savings. Through their greater foam-inhibiting properties, these polyamides reduce road and terminal blowdown, effecting savings in treatment, water, and fuel.

Higher dispatch limits for total dissolved solids are permissible at terminals. Effects of man failures in following established road blowdown procedures are minimized. Treatment costs are reduced, since higher concentrations can be carried and the resulting alkalinities produce more rapid completion of softening reactions.

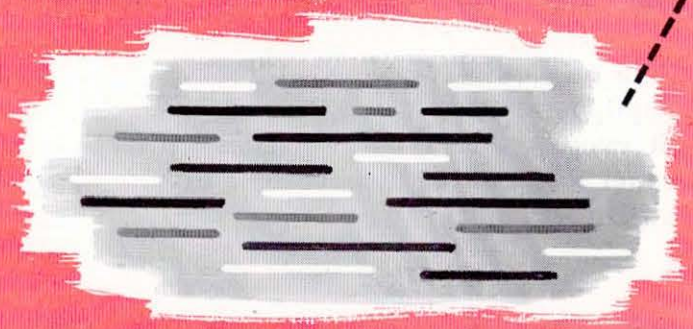
Dosages of polyamide anti-foams are smaller than any other previous anti-foam compounds.

There are Dearborn Polyamide Anti-Foams to meet all your foaming problems. Your local Dearborn representative will be happy to recommend the correct treatment for your needs.

Illustrating the molecular structure of Dearborn Polyamide Anti-Foams. When polyamides are added to boiler water, foaming subsides as indicated by the diagram.



Illustrating a portion of the new polyamide reaction kettle installed in the Dearborn factory. The chemicals are fed into the kettle from storage tanks on the floor above.



Dearborn
Reg. U. S. Pat. Off.

THE LEADER IN BOILER WATER TREATMENT AND RUST PREVENTIVES

DEARBORN CHEMICAL COMPANY

310 S. Michigan Ave., Chicago 4 • 807-15 Mateo St., Los Angeles
205 E. 42nd St., New York • 2454 Dundas St., West, Toronto

America's most progressive roads

use

BENDIX-SCINTILLA

fuel injection equipment!

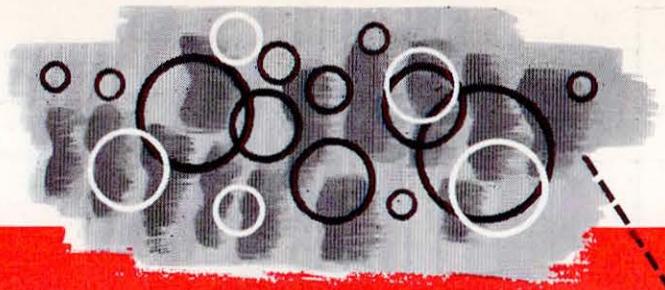
Railroading probably has made more service improvements in recent years than in the entire preceding century. It has answered public demands with new and better accommodations, finer trains, smoother operating and more efficient locomotives. That's why people are more railroad-minded today than ever before!

The New York Central, like other progressive roads, consistently uses the finest equipment as a matter of policy. Like many others also, it expresses *complete* satisfaction with the Bendix-Scintilla fuel injection equipment now in use on a number of its new Diesel units.

SCINTILLA MAGNETO DIVISION of
SIDNEY, NEW YORK

Bendix
AVIATION CORPORATION

Export Sales: Bendix International Division, 72 Fifth Avenue, New York 11, New York



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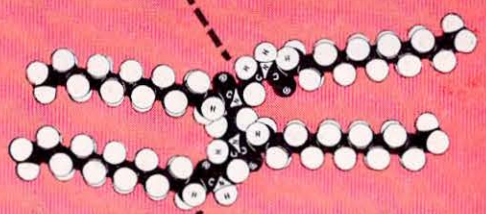

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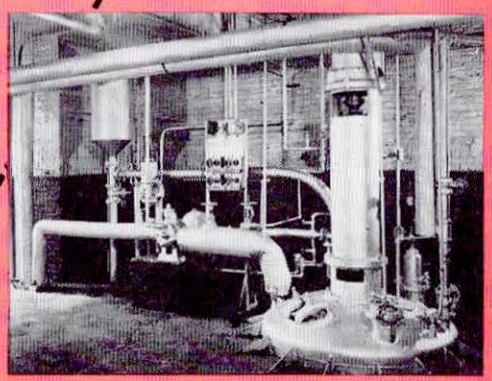
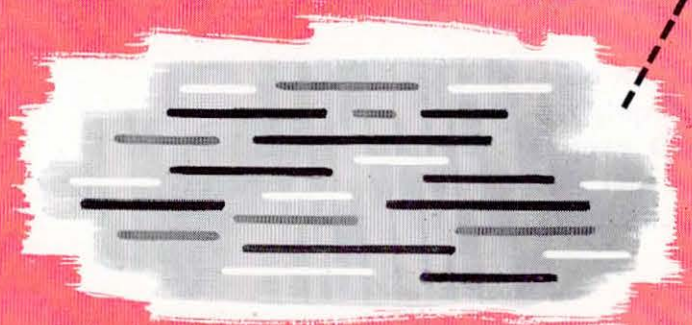


Illustrating a portion of the new polyamide reaction kettle installed in the Dearborn factory. The chemicals are fed into the kettle from storage tanks on the floor above.



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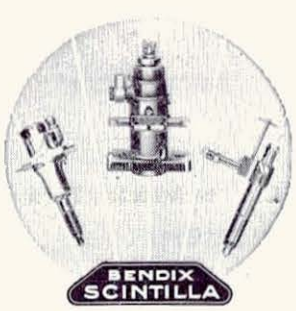

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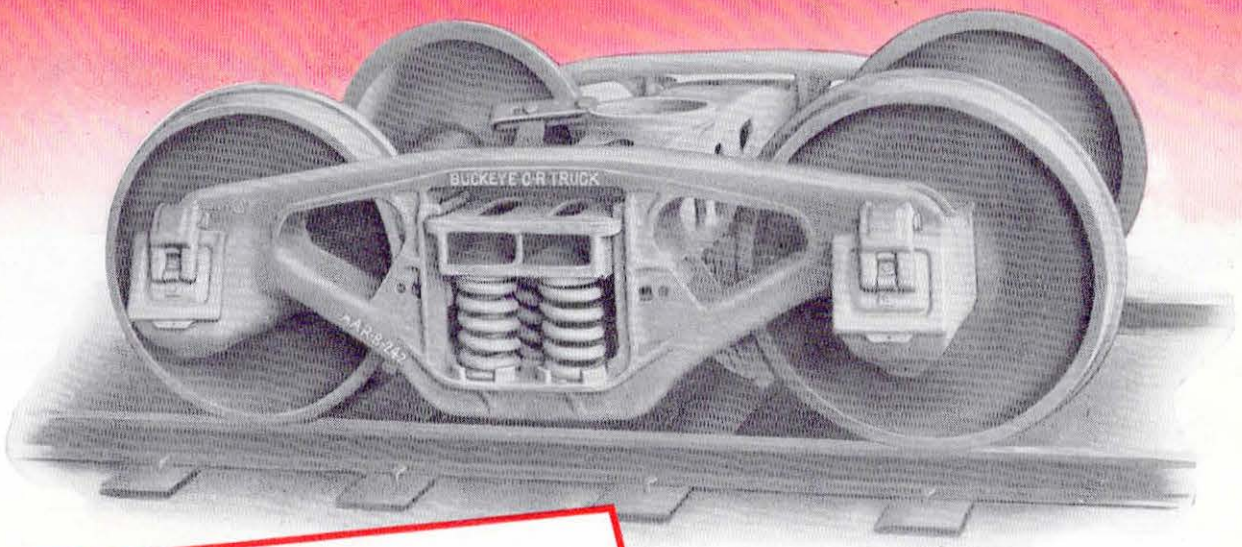

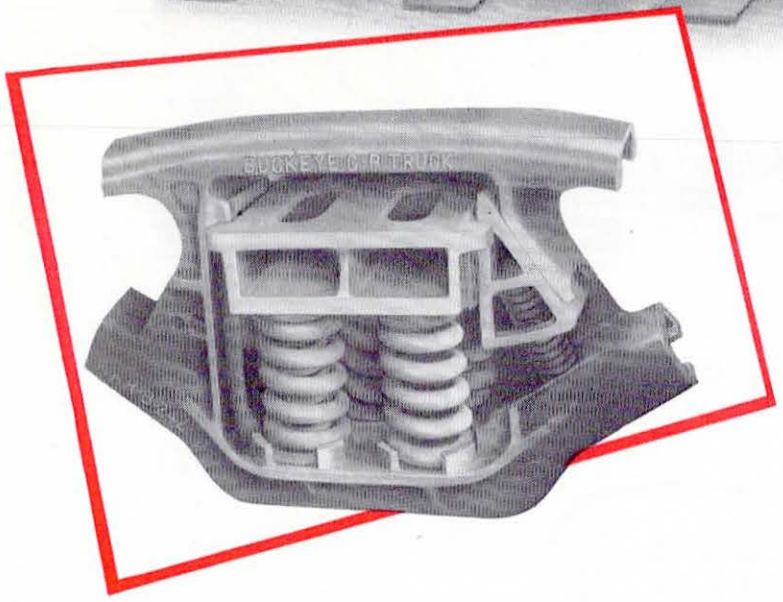

The Buckeye Steel Castings Company furnishes the side frames, bolsters, and friction parts which, like other Buckeye products, meet all A.A.R. strength requirements.

The Buckeye C-R Freight Car Truck provides superior riding qualities, resulting in reduction of damage to lading, rolling stock, and road bed.

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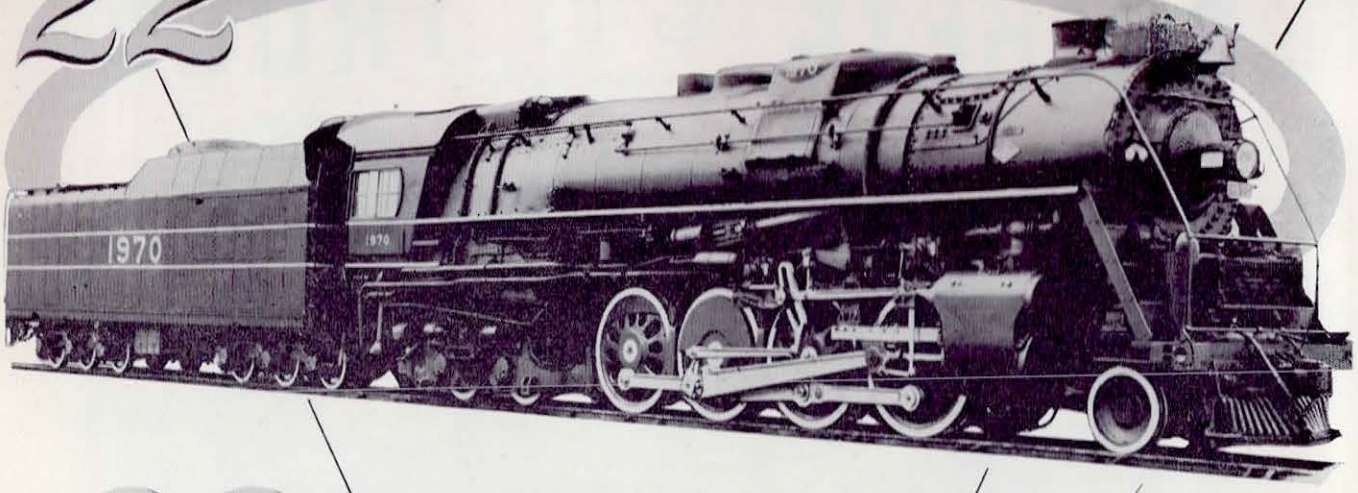
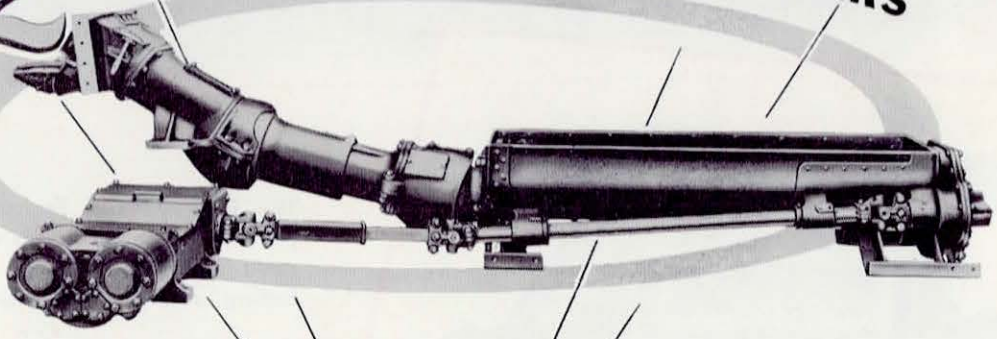


22 EFFICIENT STANDARD HT STOKERS



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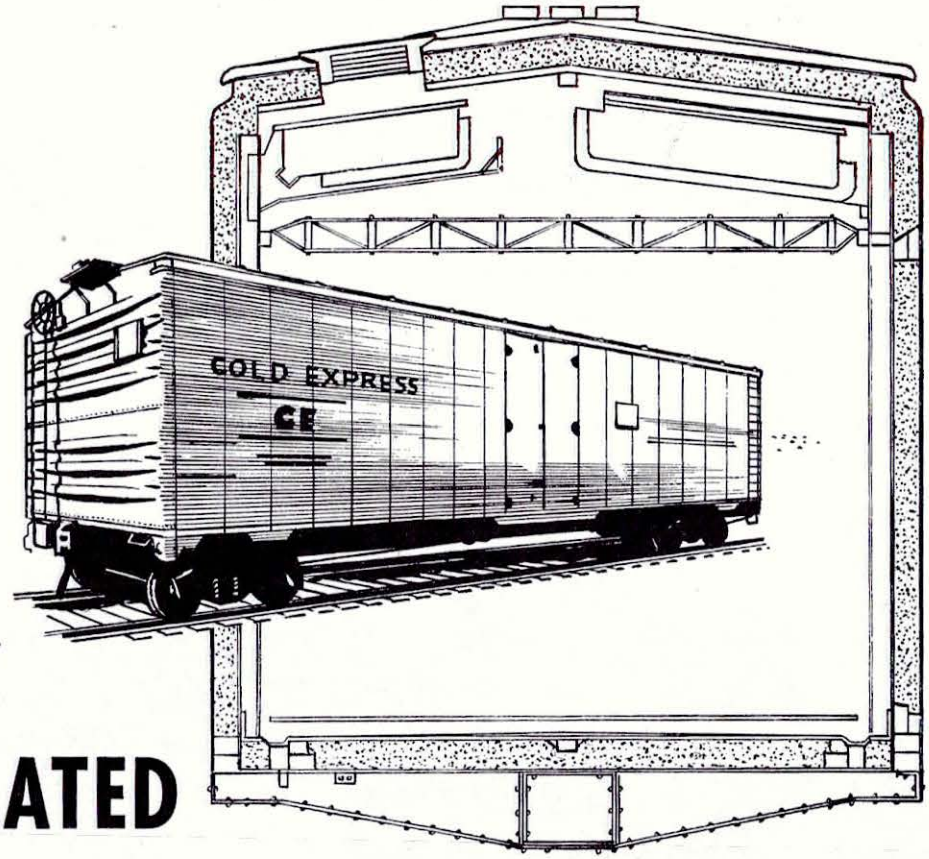

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with less than 350 pounds of Certified INSL-COTTON insulation*

Payload is what counts—and when your refrigerator cars are insulated with light-weight, high-efficiency Insl-Cotton, you're not pulling a dead-head load in the form of heavier, less effective insulating material.

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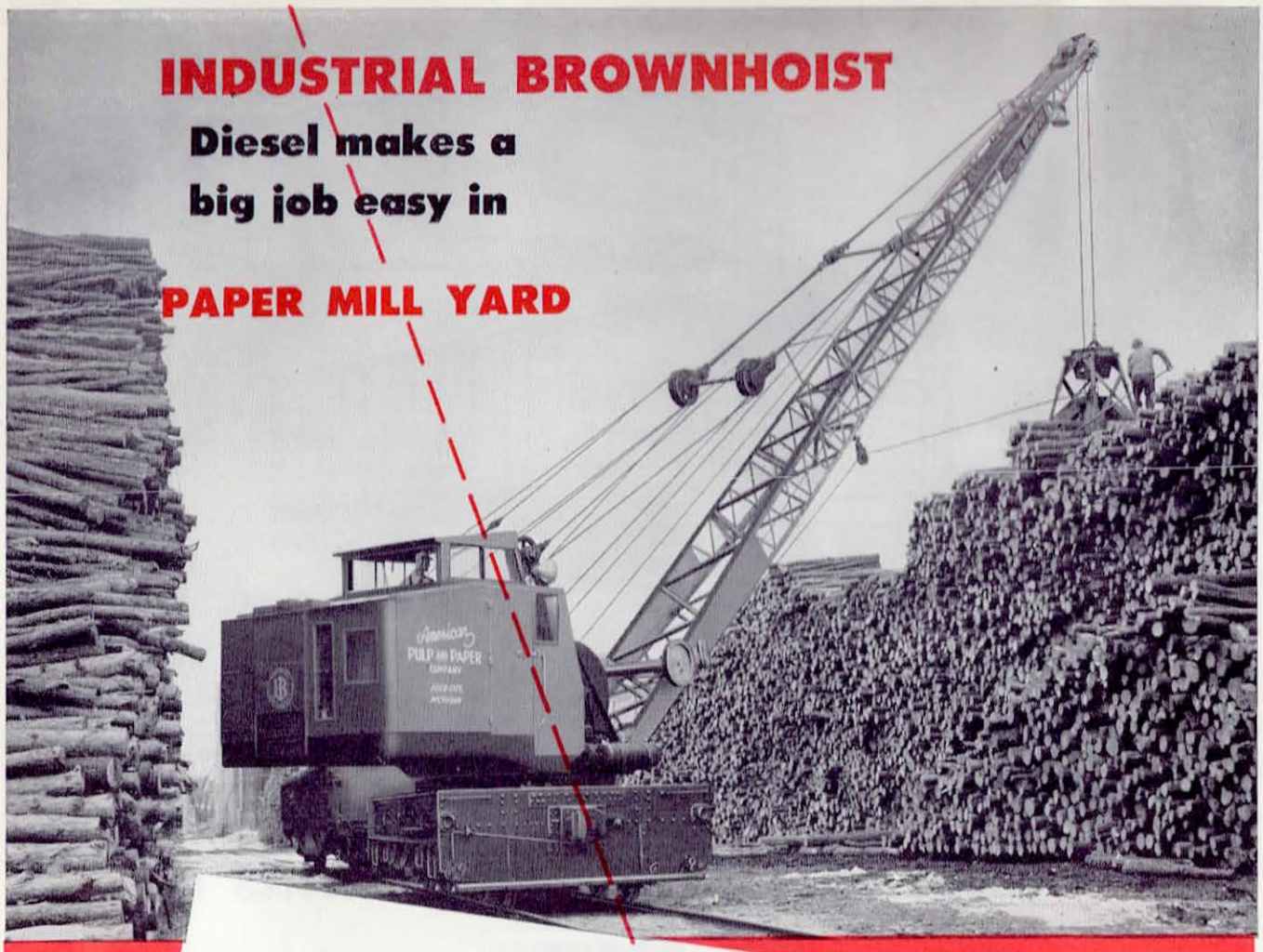

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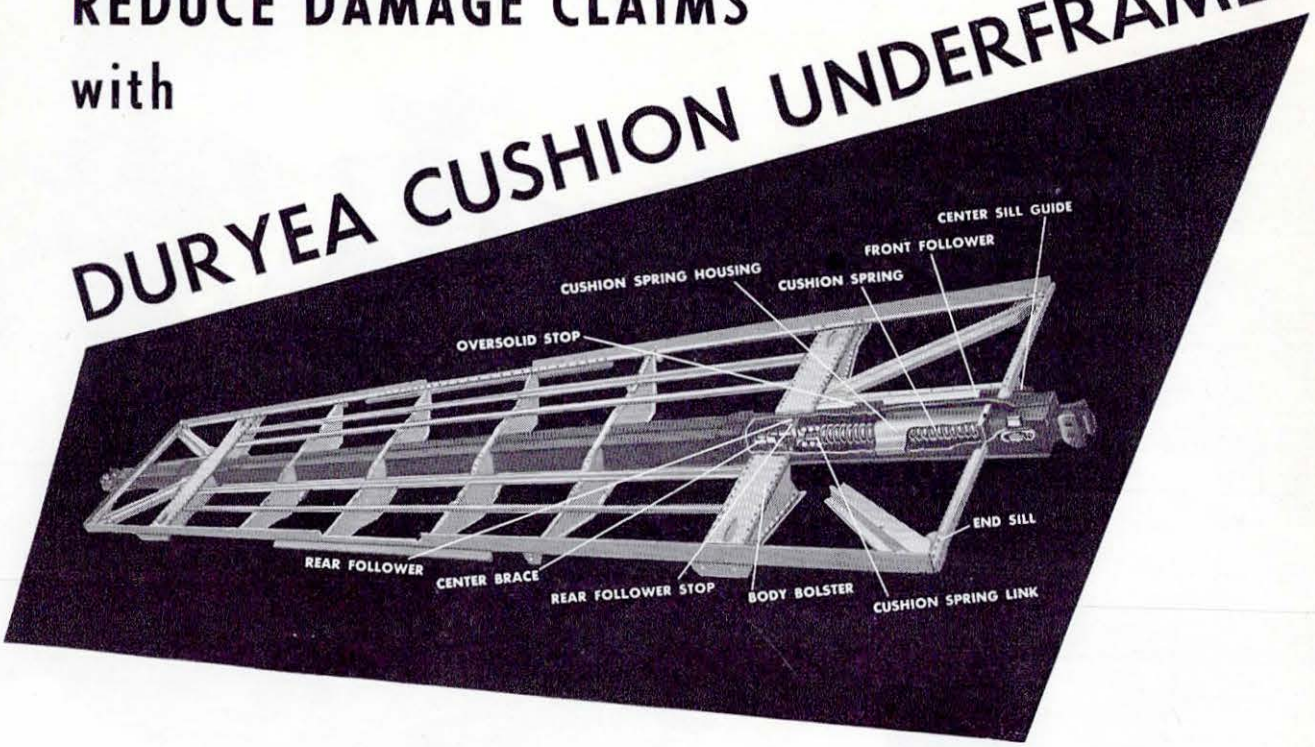
45 RAILROADS AND PRIVATE CAR LINES MATERIALLY REDUCE DAMAGE CLAIMS with DURYEA CUSHION UNDERFRAMES



90,000 Duryea-equipped freight cars of all types reduce claims every day for shippers and railroads who use them. Perishables, raw materials, manufactured goods—all arrive more safely because the Duryea device virtually eliminates damage to lading from longitudinal impacts. Maintenance costs as low as 3¢ per car per year, longer car life and less car "absenteeism" are additional benefits. Write for case histories and a showing of the new sound motion picture "Shockproof Shipping" to see how Duryea can save money for you, too.

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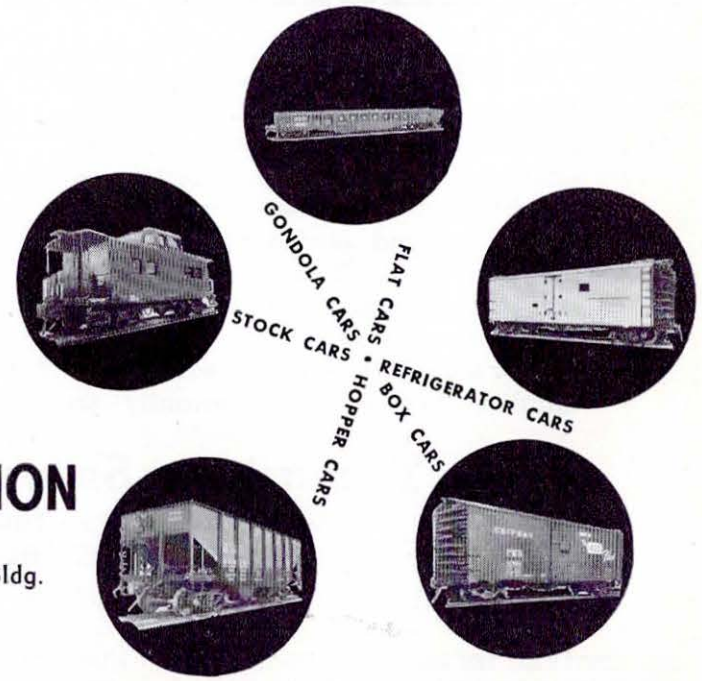

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JUST a hundred years ago, the Forty-niners stormed the gold fields of California. They faced staggering obstacles, sure hardship, uncertain reward. Thousands failed, thousands of others realized modest gain, a few made fortunes. None sought or received help or direction from a benevolent government.

Now a century later, America faces another age of golden opportunity--an era when science and industry reveal new treasure to be had for the making. Turning today's visions into reality calls for '49ers--men of purpose and resolution, courage and independent spirit. You as a leader in your community may find a personal challenge and an inspiration in the Old '49er. By example and precept, you can help America toward her greatest accomplishments--in prosperity and peace.

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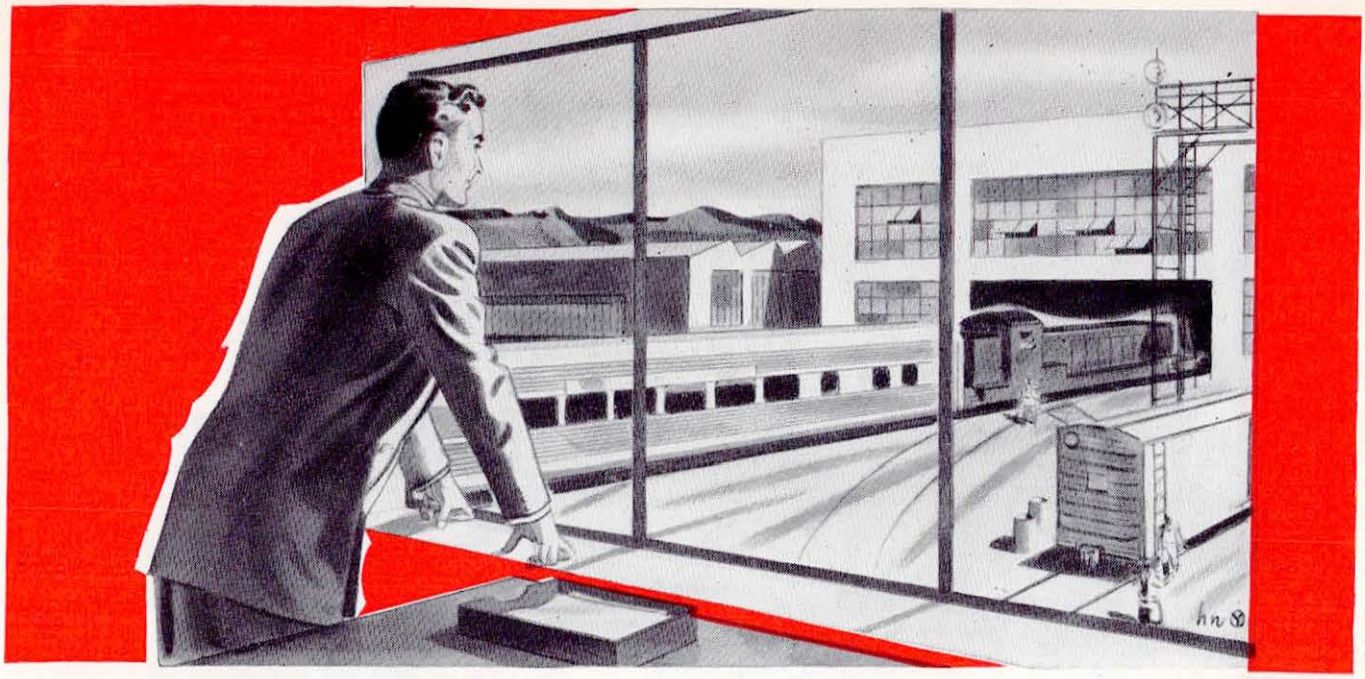

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Fewer yard stops, more road time . . . that's the record of Dayton under-car V-Belt Drives! As a matter of fact, *in over 16 years*, a power failure due to the mechanical failure of a *Dayton V-Belt Drive* has not been reported. You just can't beat Dayton Drives for transmitting electric power economically and with unfailing dependability to passenger cars, diners, Diesels or cabooses. Easy to install, convenient to maintain . . . smooth and quiet in performance, Dayton V-Belt Drives are your best investment for dependable, trouble-free operation. Let us show you an easier, more profitable way to more miles of trouble-free power transmission. Write *The Dayton Rubber Company, Railway Division, Dayton 1, Ohio.*

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2. ***Protect Equipment***... by flexible, cushioned connection between axle and driven unit.
3. ***Economical***... No expensive truck changes, or special axles needed.
4. ***No Duplicate Equipment Necessary***... when wheel changes must be made only the axle pulleys need be removed.
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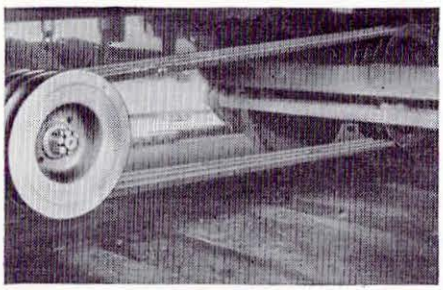
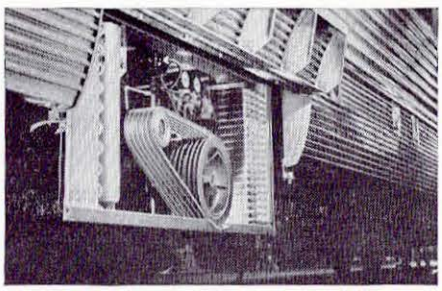
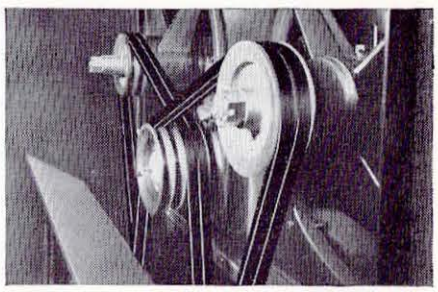
7. ***Easy to Install***... dependable in operation.

THERE'S A DAYTON V-BELT DRIVE FOR EVERY NEED • STOCKS AT DAYTON, NEW YORK, CHICAGO







Left: Dayton V-Belt Car Lighting Drives always provide bright, steady lights. *Center:* Compressors perform at rated capacity with Dayton V-Belt Drives. *Right:* Designed for efficient cooling and uninterrupted service for Diesels.

V-Belts by **Dayton Rubber**

THE MARK OF TECHNICAL EXCELLENCE IN NATURAL AND SYNTHETIC RUBBER

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MARINE BORERS in salt water frequently honeycomb untreated piles in three to six months. But **pressure penetration** of Koppers Creosote gives marine piles a serviceable life span of more than thirty years for railroad water front installations. Case histories prove these facts.

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Koppers is a specialist in the pressure treatment of wood for railroads. Whether your problem involves the treatment of marine or foundation piles, posts, poles, grade crossings, bridges, or lumber for building construction, you'll get the latest technical information, the best products, and the quickest service from Koppers.

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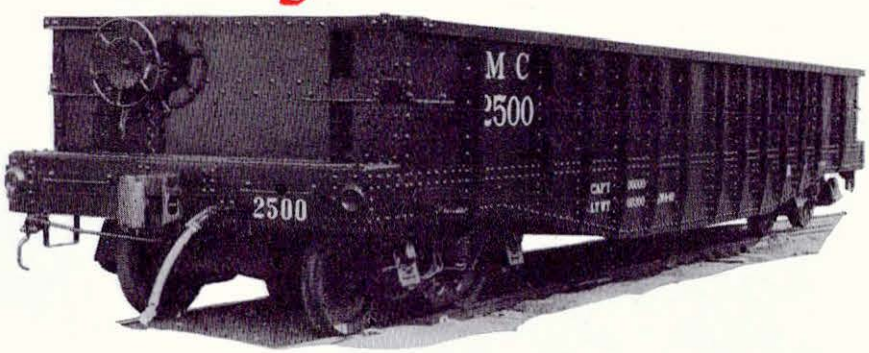

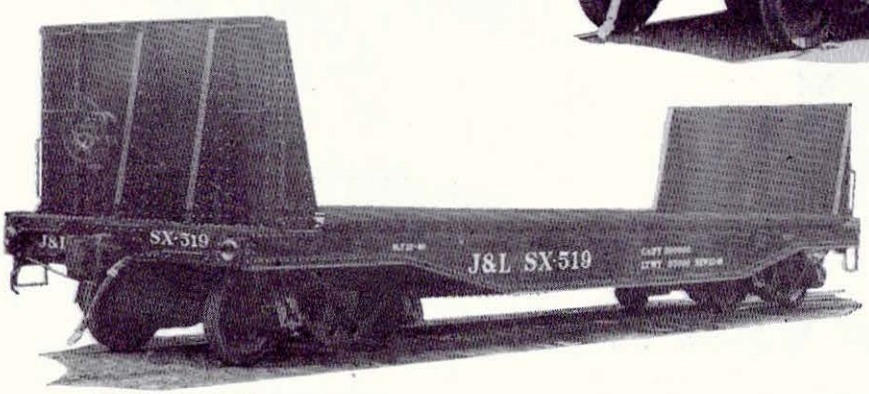

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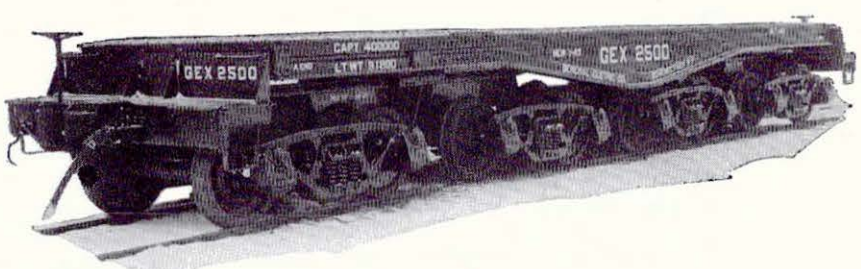

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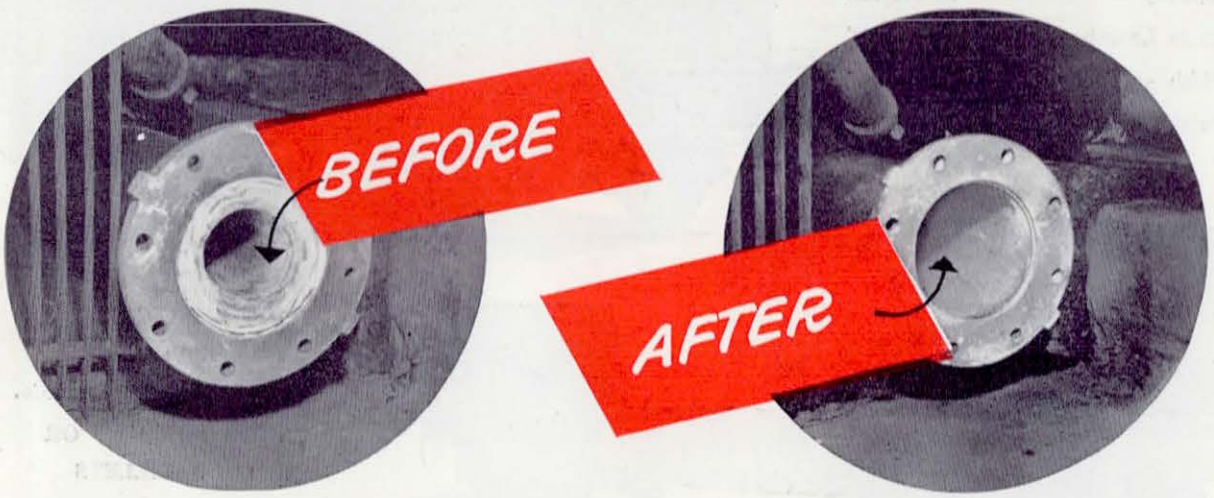

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Underground or above, indoors or out, if you have a water or product line cleaning problem, call Dowell. Leading utilities, railroads and other industries have found the Dowell Service method practical, reliable and economical. Thoroughly trained Dowell engineers do the entire job, bringing all necessary chemicals and equipment to your plant in special tank trucks.

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A SERVICE ORGANIZATION

Vol. 126, No. 21 May 21, 1949

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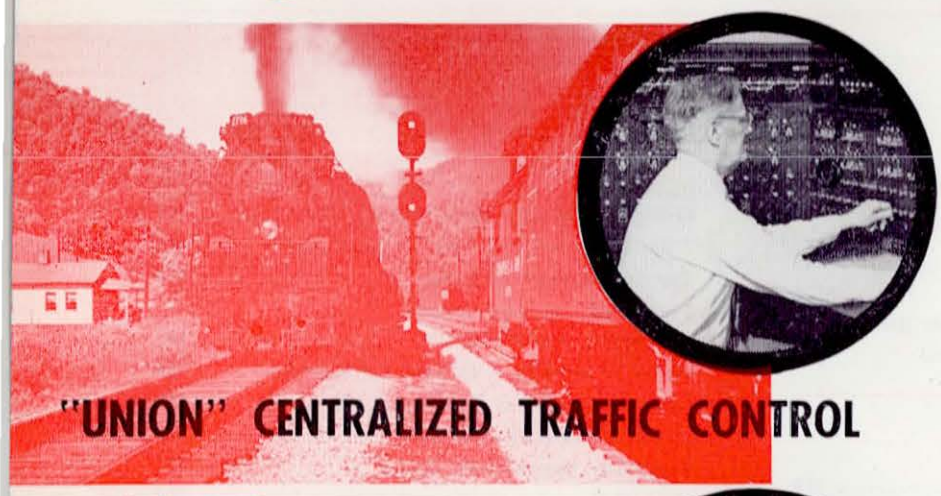

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FREIGHT PROGRESS AT A GLANCE

A YEAR'S PROGRESS: This issue of *Railway Age* reports the progress the railroads have made, particularly in the past twelve months, in improving the reliability and efficiency with which they perform their function as the principal pathways of the nation's commerce. Much has happened in that year, and not all its developments have been encouraging, but the shipper finds the railroads today better prepared than they were last May to give him good service. They have made the largest capital outlays in all history for an equivalent period, and the results of those expenditures are apparent in new cars and locomotives, improved signaling and communications, enlarged yards, increased mechanization of offices and freighthouses, and other physical plant betterments described in these pages. They have accomplished these things despite more intensive competition, a general business decline, and great increases in their payroll costs. As the only true *common carriers*, paying their way as they go, the railroads look ahead to new opportunities to produce safe, fast and economical freight transportation—goals that can be fully achieved only with the support and cooperation of their customers.

THE SHIPPERS' STAKE: The railroads' dependence on the shipper is not a unilateral relationship. The shipper depends on the railroads for economical and efficient freight transportation, and the railroads—paying their way as they go—have to give value received when they present their bills. If the railroads are to continue in good health, expanding and improving as the nation's industry and trade enlarge, they must be able to do what every other business must do to survive—they must be able to make a profit. Their customers have a bigger stake even than railroad management in the railroads' prosperity. Their customers cannot afford any kind of freight transportation except the best that the railroads can produce. No other type of freight transportation is prepared to take over the railroads' responsibilities as the only *common carrier;* no other type of transportation desires to supplant them in that role. Either their customers must continue to give the railroads fair compensation for services rendered, or the state must assume the responsibility of supporting the railroads. There is no conscious desire or demand among the railroads' customers for state ownership of railroads. American private enterprise has proved itself a superior system for the operation of a business. But the danger exists that not enough shippers will support the railroads' efforts to obtain relief from politically imposed burdens to assure its attainment in time to avert assumption of control by the state. To secure the fullest shipper cooperation, our leading editorial observes, the railroads must exhaust every means of doing their best to serve him well.

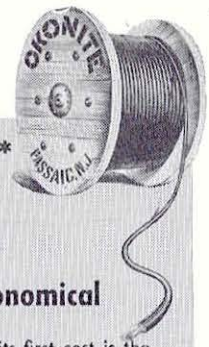
FREIGHT VOLUME DECLINES: Perhaps the most noticeable improvement in railroad freight service during the year just passed has been in the car supply. This development is a result in part of the general decline in business activity which has marked the end of the postwar industrial expansion; it is a result in part of the receipt by the railroads of substantial numbers of the new cars they have had on order; and it is a result in part of the "capture" by competing "pick-and-choose" carriers of selected segments of the general flow of freight which shippers find it profitable to divert from the railroads so long as the taxpayer shares the cost of providing the facilities for moving it. Each of these factors is analyzed at some length in this issue.

MORE "OVERNIGHTERS": Our list of regularly scheduled merchandise freight trains affording first-morning delivery between points 300 miles or more distant (page 128) this year includes 110 trains on 30 railroads, operating a total of 38,379 miles daily.

MECHANIZED STATIONS: More than 650 stations are included in our list (page 179) of railroad freighthouses, transfer platforms and piers equipped to handle "unit loads." These mechanized facilities afford the shipper faster movement of his freight, with less manual handling and, therefore, less opportunity for loss or damage. The extent to which they are made more generally available by the railroads depends not only on the use shippers make of them; it depends also on the railroads' ability to make the investment in such new equipment.

BREAKING BOTTLENECKS: One of the complaints about railroad freight service has been that inefficient yards and terminals have held up the movement of cars. The article on page 141 describes some of the steps railroads are taking in all parts of the country to facilitate their classification, inspection and assembly operations to overcome such delays. Not only are new yards being built, at great expense, but two-way radio, talk-back loud-speakers, elevated yardmasters' offices, teletypes, photographic appliances, retarder-equipped humps, and high-intensity floodlighting also are being installed to enhance operating efficiency and accelerate the flow of cars to their destinations.

PARASOLS AND LAMPSHADES: The statistical evidence is convincing that the truckers are getting a larger share of the nation's freight business than they used to enjoy. The trucker can fit his charges to the specific circumstances characterizing the shipment or the traffic he wants to move. He can make his service or rates so unattractive for commodities or routes he has no hankering for that he is not burdened with freight he finds unprofitable. The railroad has much less elbow room in making rates and providing service. Under the rigid regulation under which it must operate the railroad has to accept every kind and class of freight, with no opportunity to turn down those commodities that are unremunerative or to discriminate between customers. Such tight regulation is premised on the principle that a monopoly must be rigidly controlled in its operations to protect the public interest. But the railroad is not a monopoly. It is subject to the much more equitable and effective control of free competition, but with the handicap of excessively rigid regulation.



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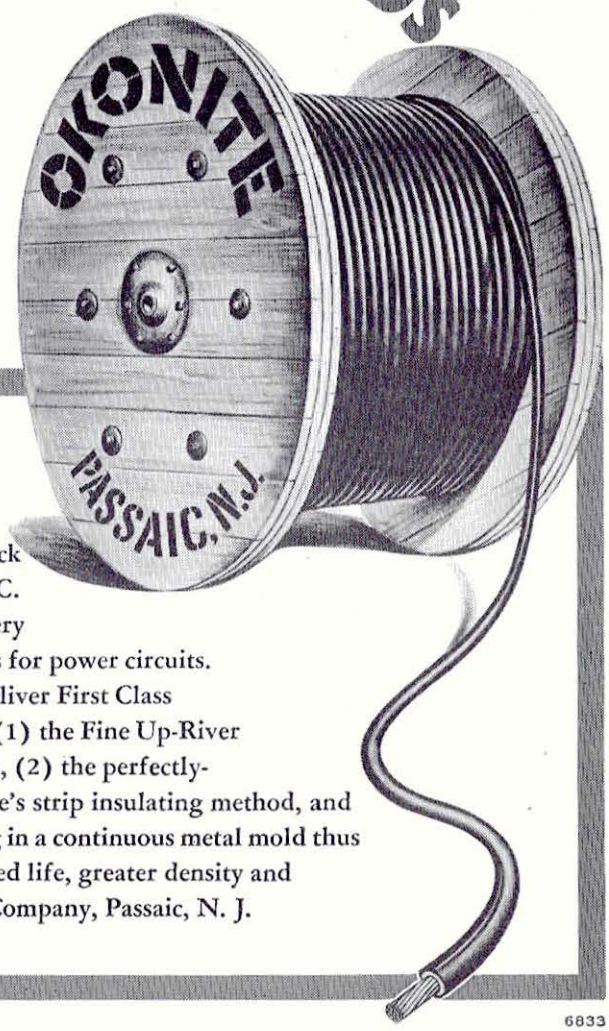

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COMMON CAUSE

Since progress looks forward rather than backward, anyone interested in progress in railroad freight service is bound to be more concerned with plans for the future than with an enumeration of past accomplishments. The past is important to progress, but only as a foundation to build upon. The most noteworthy improvement in railroad service which the past year has witnessed has been the virtually complete disappearance of the shortage in freight cars, which had handicapped the railroads since midway in the war period, or even earlier. Unfortunately, declines in carloadings have been, perhaps, as great a factor as installations of new equipment in remedying the deficiency in the supply of cars. Unsettled conditions in freight service persist, largely because rate changes are still in process. Until a reasonably remunerative rate level is at length attained, followed by the inevitable adjustments required to restore competitive balance, at least some degree of uncertainty is likely to continue.

Incontestable Inequalities

Meantime, the continuing need of the nation for dependable, economical railroad freight service — for commercial as well as military reasons — is unanimously conceded. None of the railroads' rivals desires to supersede the railroads; all any of them want to do is to "relieve" the railroads of a part of their traffic—the lucrative part, of course. No Americans want government ownership of the railroads, except perhaps Norman Thomas and his forlorn handful of disciples. The shipping community and the railroads are thus confronted with the problem of how they are going to retain a thriving and improving railroad industry, privately financed. Their ability to solve this problem is doubtful unless they can soon bring about a greater degree of equalization, as between the railroads and their rivals, in the regulation and taxation to which transportation is subjected. In approaching the public and their political representatives with a request for remedial action, the railroads could not possibly cite a more convincing argument in their own behalf than a conclusive demonstration that they are doing their level best within the means available to them. Thus the railroads have the strongest possible incentive for bringing their service up to the highest level of which they are capable.

Those who must participate if railroad freight service is to be brought to the highest possible standard of excellence are not merely the two groups —"railroads" and "shippers." The railroad participants themselves are divided into distinct groups, e.g., both the rate and service sides of the traffic department, the operating department, the mechanical department and, only to a slightly less intensive degree, the signaling and communications, roadway

and accounting departments. Complementary to the railroad groups interested as participants in the provision of improved freight service are the manufacturers who provide the physical equipment used to produce the service, e.g., the manufacturers of rolling stock and motive power and appurtenances; of roadway materials, signaling and communications; and of accounting and materials-handling machinery.

The category of "shippers" is likewise divisible —into receivers as well as senders of freight shipments; and there is a further possible division of interest within companies which ship and receive freight into those departments concerned primarily with current costs and those looking to the "long pull" and to satisfactory relations with ultimate consumers. There are important participators in freight service, also, who are not included among either the shippers, receivers, carriers or equipment manufacturers—e.g., the financial institutions which supply investment funds; concerns which provide such services as intermediate trucking and consolidation of carloads; and those which supply packing and containers.

Not a Job for "George"

When such a large goal as generally improved freight transportation service is divided among so many collaborators, the ever-present danger is that one or more of these "sub-contractors" may concentrate attention upon an immediate objective which falls far short of the ultimate goal. The specialized participant may see his own particular tree so well that he fails to see any of the other trees, or the forest as a whole.

For example, the investor might be tempted to favor low first-cost of equipment over its long-run economy. The accountant might see low operating costs in the accounting department as an objective taking precedence over that of providing the kind of records which will reveal to management the difference in profits as between different kinds of traffic; or he might favor equipment rental practices which would simplify accounting while destroying incentives for the provision of improved equipment.

Again, the manufacturer of a device contributing to greater safety of lading at higher speeds might be tempted to concentrate his sales effort on gaining acceptance of his product because of its engineering merits, to the neglect of its potential contribution to increased customer satisfaction and resultant increase in traffic. On the "shipper" side, there may be the temptation to cut corners to reduce today's transportation charges, regardless of the ultimate effect of such a myopic policy on the maintenance of reliable transportation service in times of stringency in transportation supply, as well as in those of its abundance.

Does not a very little of such observation and analysis lead inevitably to this conclusion: *All the people and all the interests whose ultimate objective is improved railroad freight service will certainly accomplish a great deal more if they decide to work together than if each of them insists in going his own departmental way all alone?*

What the shipper or receiver of freight wants is fast and dependable service on convenient schedules, with incidental costs (e.g., packaging, or loading and unloading expense) minimized, and economical rates which meet the exigencies of his competitive situation. There are a half-dozen railroad departments and at least double that number of suppliers of equipment who have to combine their efforts in order to give the shipper and receiver this high standard of service. These many participants do not always consciously coordinate their efforts—hence their timing may not be effective. A freight car truck which gives freedom from damage by lateral and vertical shocks to a car's lading does not accomplish its full objective unless applied in conjunction with devices which cushion longitudinal shocks also. None of these devices yields its maximum possible return on the extra cost unless it is used in high-speed service. At the same time, neither high speed nor a high-quality freight car will yield any return whatever unless they are provided in conjunction with a schedule of rates which meets the exigencies of the prospective customer's competitive situation.

A Question of Confidence

When a general in command of an army attacks a military objective, he plans the movements of his forces so that they act in unison. Each division, each regiment—and so on down to individual squads—moves by timetable, in logical relationship to supporting forces. Similar tactics are needed for an effective attack upon a railroad traffic objective, bringing all the available weapons — mechanical, operating, rate-making—into a harmonized movement, so that each departmental move supports and strengthens all the others.

No one can doubt that restoration of investors' confidence in the railroads is the only alternative to financing them from governmental sources, with consequent risk of government ownership. No one can expect that investors' confidence is going to be restored unless legislative and regulatory authorities relieve the railroads sufficiently of their extraordinary burdens— as compared to those of rival transportation agencies—so that actual and prospective earnings are brought to an attractive level. The enthusiastic support of the shipping fraternity is indispensable to the attainment of these political objectives; and the surest route to a shipper's affection is to serve him well. The railroads can make no stronger claim for political support from their customers than a demonstration of their zeal to *do the very best they can with the means available.* As the

famous parable teaches, the servant who makes the most profitable use of the talents his master leaves with him is the one whom the master will be most inclined to entrust with much greater things.

CAPITAL NEEDS IN TERRITORIAL GROWTH

That the South and Far West are growing industrially and commercially at a far greater rate than the rest of the country is well known. Most of this growth is a net addition to the country's wealth and not necessarily at the expense of the older sections.

It has meant, of course, that during the past decade the "growth factor" has affected strongly the western and southern railroads. In 1948, net ton-miles of the railroads in the Western district were 108.7 per cent higher than in 1939, and in the Southern region, 99.3 per cent higher. In the Eastern district, on the other hand, 1948 traffic was but 62.5 per cent higher than in 1939, and in the Pocahontas region, 76.9 per cent higher. "Growth factor" has been responsible also for the fact that the decline in traffic in the South and West in 1948, compared with 1947, was less than elsewhere. Whereas the decline in net ton-miles, 1948 compared with 1947, for the United States as a whole was 2.5 per cent; for the Eastern district, 3.7 per cent; and for the Pocahontas region, 4.6 per cent; traffic in the Southern region declined only 1.8 per cent, and in the Western district, 1.4 per cent.

The president of the Southern Pacific points out, for example, that while, on the average, one new industry each day was established on his line during the 15 years before World War II, the rate has now increased to better than 2½ industries a day. The ten-year growth in population in the United States has aggregated eight million persons, of which 47 per cent occurred in the eight western states served by the S. P. In April the president of the Missouri-Kansas-Texas noted that cars loaded on his railroad thus far in 1949 were about 7 per cent ahead of last year, while in contrast, cars received from connections, originating in other sections of the country, were off about 12 per cent.

The fact that freight rate increases since the war have not been uniform among the regions, but have been smaller in growing areas than in the older sections, bids fair to accentuate natural growth factors. Cumulative percentage increases in railroad freight rates authorized to date since June 30, 1946, amount to 55.6 per cent in the Eastern district; 47.1 per cent in the Pocahontas region; 52.6 per cent in the Southern region and 47.4 per cent in the Western district.

It is not surprising, therefore, that the capital expenditures of the railroads in the growing regions should be relatively greater than those in the older regions. This is clearly indicated by a comparison of actual gross capital expenditures for 1948 with those estimated for 1949, as follows:

District or region	Actual year 1948	Estimated year 1949	Per cent of change
Eastern district	$469,868,550	$472,956,603	+ 0.7
Pocahontas region	131,509,709	110,892,730	−15.7
Southern region	146,241,217	202,958,539	+38.8
Western district	479,081,828	*555,131,550	+15.9
Total	1,226,701,304	1,341,939,422	+ 9.4

* Estimates for 1949 not furnished by four carriers whose total capital expenditures amounted to $39,168,242 in 1948.

Additions and betterments of the type required to keep railroad facilities in step with industrial and commercial growth in the West and Southwest comprise a great deal more than rolling stock. To serve a boom city like Houston, Tex., for example, requires large additions to fixed plant, which are, in fact, now under way on the terminal properties at that point. This is a type of financing which is difficult for the railroads to achieve under present profit margins and prospects of increased subsidized competition. The country must decide whether the railroads are to fall behind in necessary growth or whether they will be accorded the nutriment from which to build additional bone and sinew.

TEAMWORK ON LEGISLATION SHOULD BE REGULAR HABIT

Members of Congress and state legislatures must consider shippers an important group of "the people back home." These customers of the railroads comprise a substantial portion of the public; and legislators, like all public officials in elective office, quite naturally recognize *vox populi* as their master's voice.

This is not to suggest that bloc pressures be applied to lawmakers for selfish ends, but to point up the desirability of shipper-railroad cooperation on the promotion of sound legislation and opposition to unsound proposals. That such cooperation can be fully effective is demonstrated by the fact that Congress has been disposed to give careful consideration and great weight to shipper and carrier views which are in accord.

The most notable recent example of this was the enactment last year of the Bulwinkle-Reed Act which accords immunity from the anti-trust laws to carriers participating in rate-making agreements and procedures approved by the Interstate Commerce Commission. This act had such overwhelming shipper support that it became known as a "shippers' bill" when it was on its way through Congress. And its enactment over President Truman's

veto was due in no small part to the manner in which shippers let members of Congress hear from them as "people back home" after the veto message was delivered. Another "shippers' bill" was the land-grant-rate repealer enacted in 1945.

Equally effective, though less publicized, has been the opposition of shippers to proposals of the legislative rate-making variety. Among such proposals have been those relating to so-called territorial rate "discriminations," and others calling for a rigid mileage basis of rates, "postalized" rates, etc. They were not even seriously considered because Congress was made aware of the shipper-carrier agreement that such legislation would be unsound.

These results warrant continuing efforts on the part of the railroads to foster the development of shipper cooperation into a regular habit. There are, of course, conflicts of interest between railroads and shippers, but the area of conflict is narrower than might be supposed. As to most proposed transport legislation, shipper and carrier interests are closely identified and often identical. Both groups have the same objective—a healthy railroad system under private ownership, capable of furnishing good service at the lowest possible rates.

LOSS AND DAMAGE— A COMPREHENSIVE VIEW

Most of the loss and damage which is paid for by the railroads is caused by: (1) obsolete packaging methods; and (2) old and inefficient materials-handling procedures and equipment. There is little disagreement among railroad loss and damage prevention men that the second cause is the more important.

Transportation—the physical process of distribution—is a continuous job of materials handling. Only a part of this process is performed by the railroad. Other equally essential parts are performed by shipper and receiver, including car loading and unloading, and the handling between storage points and the carrier vehicle. *The carrier, common or contract, is just one link in this chain of materials handling.* In the long run, that carrier which makes the largest contribution to the economy of the *entire process,* and not just its own part, will be the one which will get the largest patronage Since loss and damage enter into the costs which largely determine rates, the shipper pays at least part of his own claim, thus increasing his transportation costs.

The railroads perform two somewhat different materials-handling functions when they transport (1) carload freight—to which about 65 per cent of the claim bill is due—and (2) l.c.l., which is responsible for about 35 per cent of the loss-and-damage bill. Railroad handling of the shipper's goods begins the moment a car is selected to take the load. If that car is not fit for the shipper's product or if it has a mechanical defect, such as a weak draft gear, which will make it a "rough rider," two steps toward producing a claim have been taken. If the shipper has not been educated in proper stowing, blocking and bracing there is still a third chance for damage. Delay, poor track and rough train-handling just add to the factors which may prevent the shipment's reaching destination in a usable condition. The activity of the railroads' loss and damage prevention departments in remedying these conditions makes it apparent that this effort is worthy and necessary.

L.c.l. is a somewhat different problem, since loading and stowing are done by the railroads' own forces. Also, in handling l.c.l., the railroad performs not only the usual transportation functions of getting the freight from Point "A" to Point "B," but also move it across station and transfer platforms and in p. & d. trucks. Station handling of l.c.l. is expensive, and in the past few years railroads have been attempting, with some success, to cut this cost by extending the mechanization of stations. Most railroad men are convinced, too, that mechanical equipment is helping to hold down the amount of loss and damage to l.c.l., to the mutual advantage of the carriers and their customers. Yet, one of the country's largest railroads states that, except for minor improvements, its mechanical handling program is stymied until such time as shippers more frequently make use of the unit load method of shipping. Additional missionary effort by the railroads in behalf of this practice ought to improve and economize their service, and hence increase its competitive advantages.

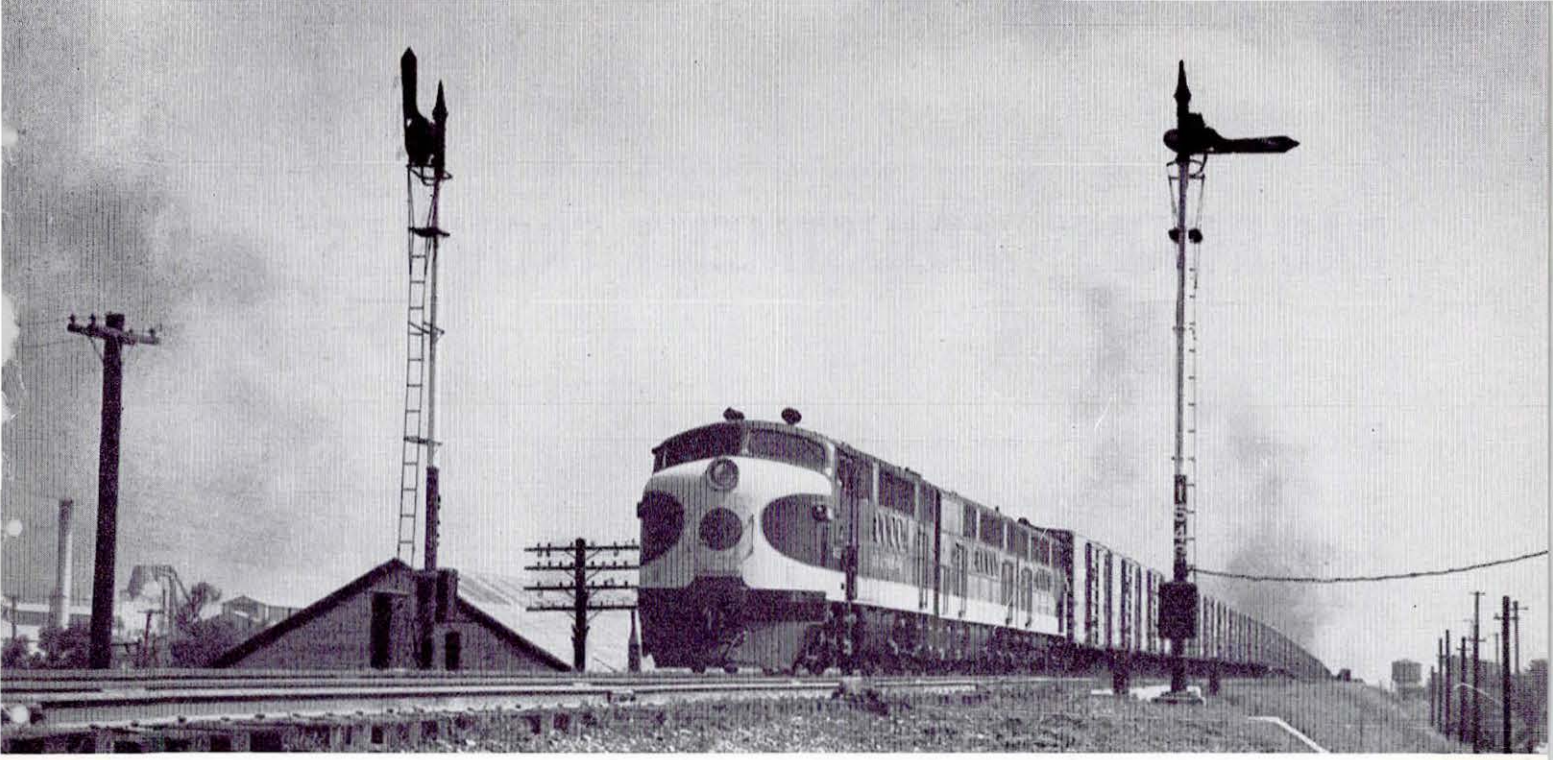
THE ROAD TO SOCIALIZATION

The use of subsidies as a remedy for economic ills and dislocations does not get at the root of the trouble. Like a narcotic it merely provides temporary relief and thus prolongs the day of reckoning.

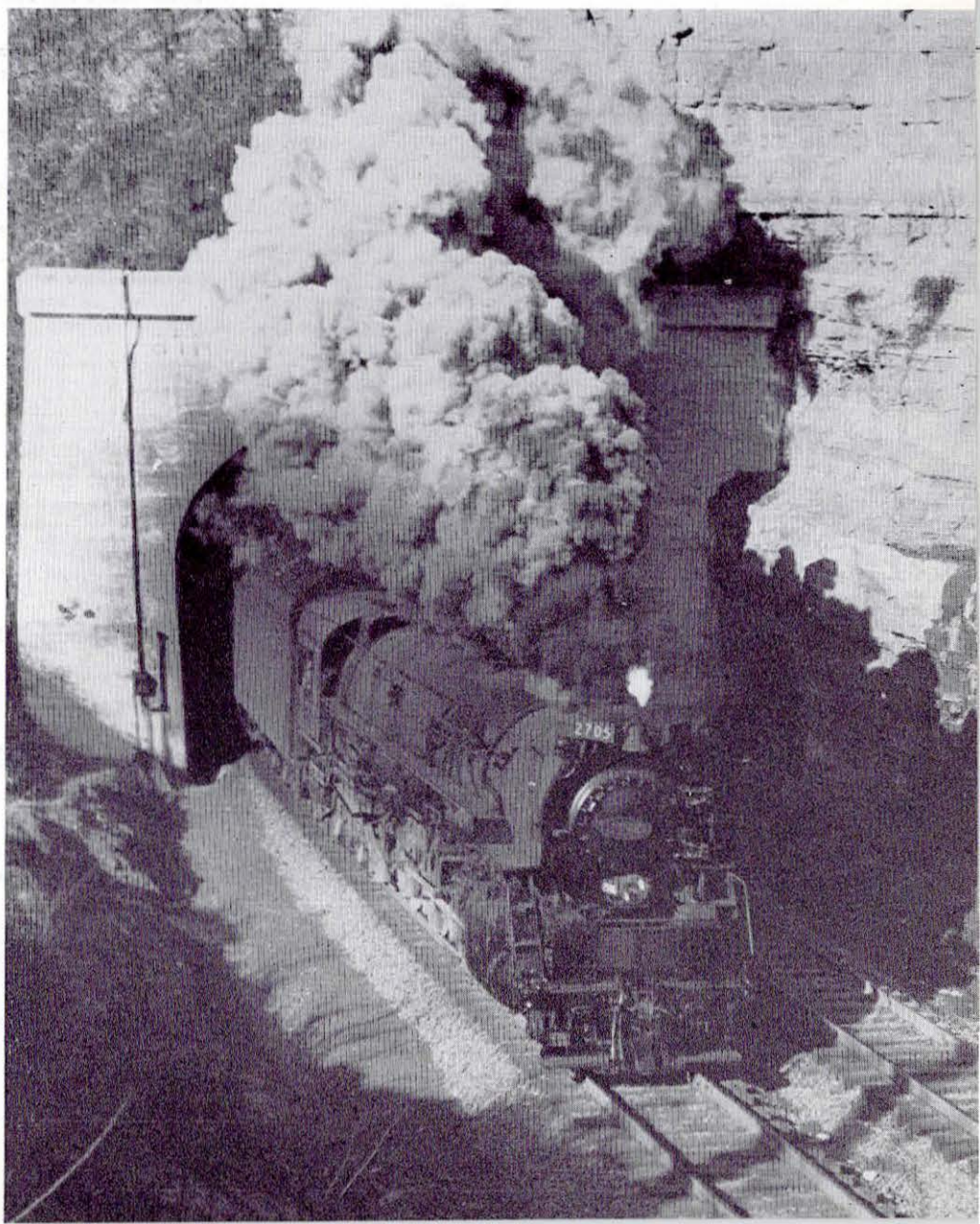
Subsidies are an evil palliative which undermine the initiative and resourcefulness of man, and lead to the destruction of democracy.

The free, competitive enterprise system of our nation cannot indefinitely survive if the government planners continue to load it down with taxes to provide subsidies in ever-increasing volume and variety. The day will eventually come when the back of private industry will be broken.

—From an address at Dallas, Tex., by W. G. Vollmer, president of the Texas & Pacific



Freight Progress Issue -- 1949



RAILROADS' "ADJUSTMENT TROUBLES"

Along with their customers, the railroads are having things happen to them which differ sharply in character from their experiences of the last decade. The sellers' market is gone (the railroads lost theirs sooner than most businesses); the car shortage has disappeared, except for isolated tightnesses in specific types of equipment; materials are quite easy to get; business volume is decreasing.

But the situation of the railroads also differs in some respects from that of other businesses. The upward spiral in their costs has not yet ceased. They are just beginning to absorb, for example, a 7 cents-an-hour non-operating employees' wage boost and, on September 1, when the 40-hr. week for these employees goes into effect, will have to take an additional 20 per cent increase in the hourly rate. The brotherhoods are still active in thinking up wage increase demands and "make-work" schemes simultaneously. The local taxes on rights-of-way (which competitors do not pay) are mounting at a rapid pace—just like those of home-owners. Further, unlike most other businesses, the roads cannot adapt their service to demand at will; there is the "little matter" of getting state and federal authority for service curtailments.

Traffic Barometer

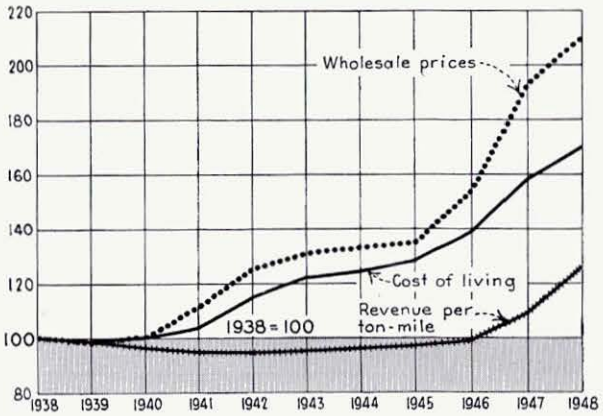
Carloadings in the first 16 weeks of 1949 were 7.4 per cent under 1948 and 13.9 per cent under 1947. Loadings of grain and grain products, coke and ore, however, increased substantially over last year.

Unfortunately, the more satisfactory barometer of revenue tons and revenue ton-miles carried is available only for the first month of the year. January, 1949, shows a decline of 9.4 per cent in tons carried, compared with the same month of 1948, and of 12.9 per cent compared with January, 1947. In ton-miles this year's first month shows a decline of 10.2 per cent under 1948, and 13.6 per cent under 1947, but its volume was higher than that of any January prior to 1942, including the prosperous Twenties.

Though railroad traffic may be declining, it has a high "plateau" from which to do so, a fact which many alarmist accounts in the press these days fail to observe. Table I shows that freight traffic in 1948 was higher than in 1946 and way up over any year in history, except those during the swollen World War II period.

The commodity committees of the shippers advisory boards are not overly pessimistic about the future—for the second quarter of 1949 they forecast a reduction of but 3 per cent in carloadings under the same period of 1948.

Aside from the recession in general business activity and the coal miners' two-week holiday, March 14 to 28, other influences have been whittling at the railroads'



Above—How increases in railroad freight rates compare with prices and living costs

Facing page—The blizzard of '49 imposed unprecedented burdens on western railroads

TABLE I—HOW IS FREIGHT TRAFFIC HOLDING UP?

The decrease in carloadings thus far in 1949 indicates that railroad freight traffic is falling off. But it has a substantial "plateau" from which to drop. The year 1948 was good, as is evidenced by comparing it—percentagewise—with significant years of the past quarter century:

Compared with	1948 Is Up or Down — Rev. Tons Carried	Rev. Ton-Miles
1947	−1.4%	−2.5%
1946	+9.2%	+7.8%
1944	−5.6%	−13.4%
1939	+74.2%	+91.5%
1932	+146.6%	+172.4%
1929	+18.4%	+42.8%
1920	+29.0%	+55.7%

1944 — All-time record year
1939 — Prewar "normal" year
1932 — Lowest traffic year
1929 — Last year of "boom" Twenties
1920 — First year of modern era of railroading

TABLE II—FREIGHT RATE INCREASES SINCE THE WAR

Date of I.C.C. report	Effective date of freight rate increases	I.C.C. Docket Number	Per Cent Increase over Rates in effect on June 30, 1946 cumulated	Per Cent Increase over Rates in effect immediately prior to increase shown
June 20, 1946	July 1, 1946	Ex Parte 148 Ex Parte 162	6.5	6.5
December 5, 1946	January 1, 1947	Ex Parte 148 Ex Parte 162	17.6	10.4
October 6, 1947	October 13, 1947	Ex Parte 166	28.1	8.9
December 29, 1947	January 5, 1948	Ex Parte 166	37.8	7.6
April 13, 1948	May 6, 1948	Ex Parte 166	42.8	3.6
July 27, 1948	August 21, 1948	Ex Parte 166	44.2	1.0
December 29, 1948	January 11, 1949	Ex Parte 168	51.7	5.2

Source: Bureau of Transport Economics and Statistics, I.C.C.

traffic level. In a wave of uncertainty about possible punitive government action on basing point pricing, arising from the Supreme Court's decision in the cement case, some other industries—chiefly steel—last year shifted to an f.o.b. basis, which violently disturbed old relationships, put extraordinary emphasis on relative rate levels of competing carriers, encouraged private and contract carriage, and threatens the long-range effect of decentralizing industry and reducing the ton-miles handled by all forms of transportation. Neither industry nor members of the Federal Trade Commission itself agree fully whether the court's decision bans all basing point pricing or merely that kind which is "collusive." The outcome is of grave interest to all shippers and carriers.

The end of scarcity of most materials has also brought a reduction in overall freight offered. Firms no longer go to "outlandish" places to buy scarce items; as markets loosen, cross- and back-hauling are reduced; increasingly penny-wise companies are shifting from premium-rated to cheaper forms of transport. Sometimes —as when they shift from truck to carload movements— this is good for the railroads; in other cases—where they turn to slow barges—it is bad.

Much ado is made of reported heavy diversion of traffic to the railroads' competitors. This kind of fluctuation is hard to measure, because it cannot be isolated entirely from other influences, but the rapid and substantial expansion of truck and barge operations during the past several years gives evidence that railroad rivals are increasing their relative share of total freight business. On the other hand, truck traffic at least, shows some signs of diminishing for the first time since the war, being off 6 to 8 per cent in January.

No "Off-Side" Playing

Meanwhile railroad managements are being forced to continue to ask for increased rates; they have no choice; the roads must be sustained. Thus far, rate increases have brought in more additional revenue than was lost by diversion or any possible drying-up of traffic. While the carriers make the necessary delicate adjustment between their costs and the rates of their competitors, the important thing is to remain calm and not to be found "playing off-side."

Waiting for the I.C.C.

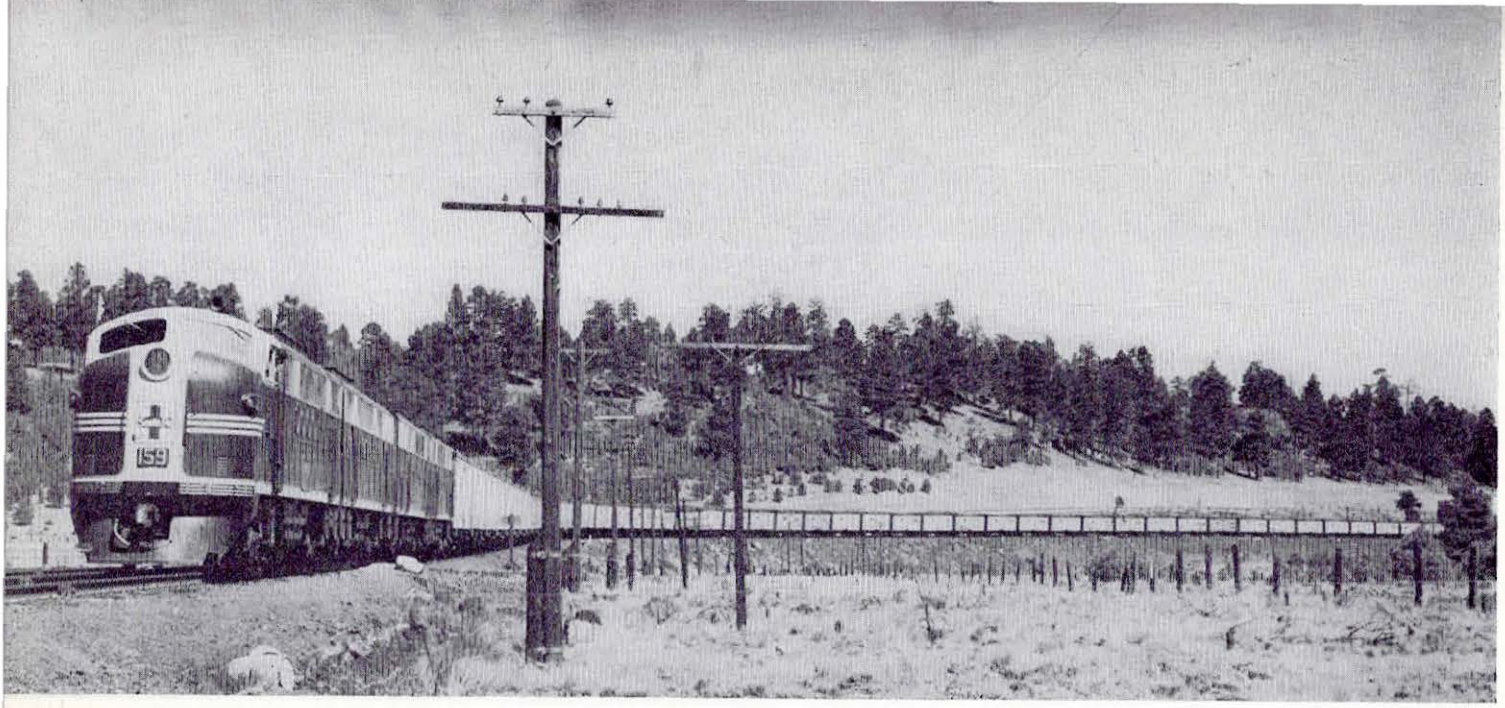
Since the end of the war, railroad freight rates have been increased overall by 51.7 per cent, as results of a series of general increase proceedings, as summarized in Table II. Interstate Commerce Commission action is still awaited on the remainder of the increase of 13 per cent overall, for which the roads asked in their amended Ex Parte 168 application of October 12, 1948. This application was met in part by the 5.2 per cent interim increase granted by the commission effective January 11, 1949.

Whatever the effects of these necessary rate increases may be on the traffic volume of the railroads, they do not constitute a burden on commerce nor do they affect

TABLE III—REGIONAL DIFFERENCES IN FREIGHT PERFORMANCE—PLUS EXTENT OF DIESELIZATION

Region or district	Freight service gross ton-miles per train-hour 1940	1948	Per Cent increase	Per cent of total gross ton-miles handled by Diesels 1948
Eastern district	34,163	36,801	7.7	15.32
Pocahontas region ...	51,501	55,794	8.3	.07
Southern region	27,084	33,325	23.0	25.99
Western district	33,084	42,656	26.2	26.00
U. S. total	33,859	39,782	17.5	20.37

Source: Bureau of Transport Economics and Statistics, I.C.C.



the cost of living in any way comparable with wholesale prices or other items in living costs. This is clearly indicated in the accompanying graph showing trends of freight rates, the cost of living, and wholesale prices. In January the I.C.C. pointed out that the ratio of freight rates to wholesale prices at destination of commodities transported by rail was lower than at any time since its Bureau of Transport Economics and Statistics has been keeping figures on the subject.

Car Supply

Except for scattered situations, the worry about car shortages would appear to be over, at least while present traffic levels continue. More new freight cars were placed in service in March than in any other month in more than 20 years. Since the start of the campaign of the Association of American Railroads for a full return to car service rules, freight equipment has come back steadily to owner roads for shopping and upgrading. During 1948 there was a gain of 29 per cent in the number of freight cars on home rails.

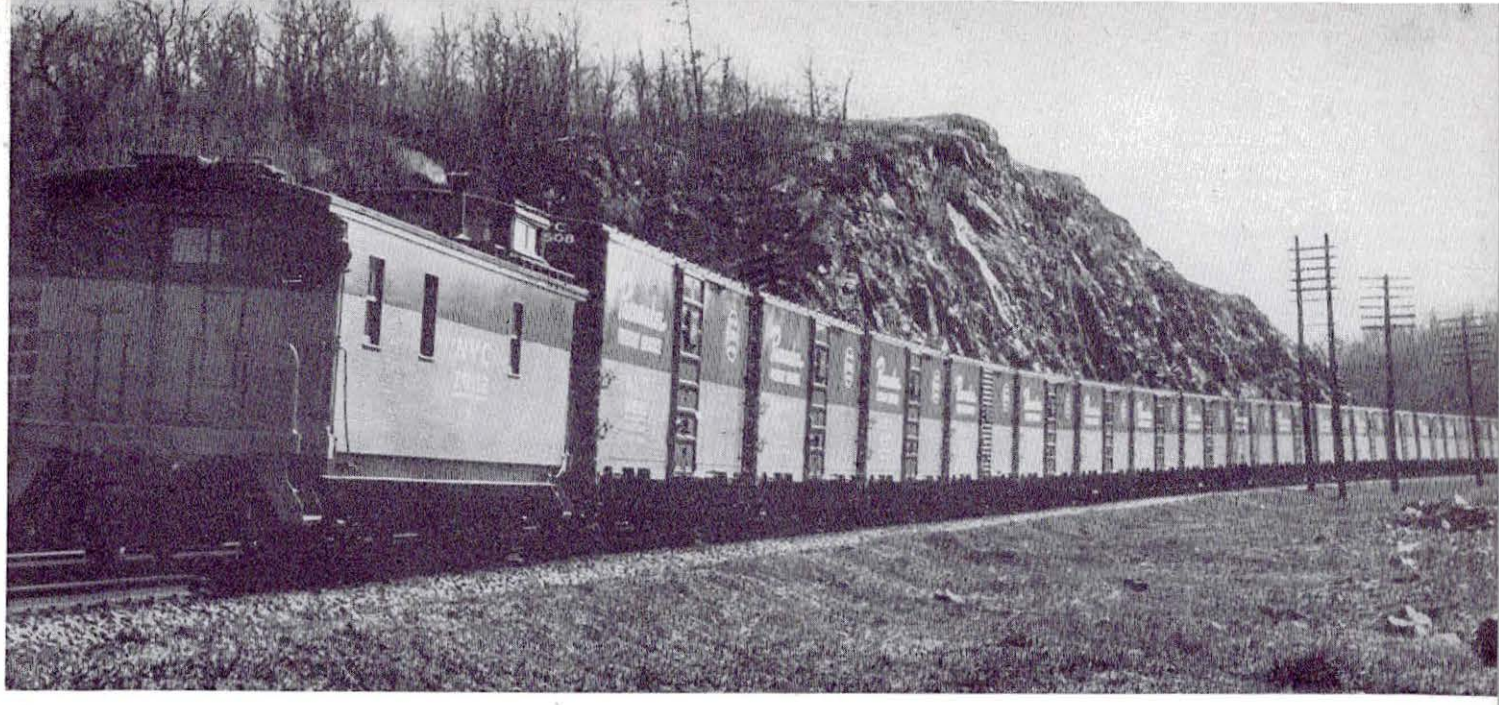
Effective February 14, the Office of Defense Transportation's wartime General Order ODT 18-A—requiring that cars be loaded to full stenciled or visible capacity—was temporarily suspended until April 16, to be later further suspended, along with General Order 1—the minimum loading rule for merchandise cars—and other war and postwar controls, until June 30, when it will be permanently revoked, since O.D.T. itself is scheduled to be discontinued on that date. Signs of a bumper grain crop, concentration of the harvest to an unprecedented extent by modern farm machinery, and the fact that primary and market elevators are filled with last year's grain indicate that the carriers will have to take steps to control carefully the supply and use of box cars for grain loading, and that the supply may be tight.

LEADERS OF THE

A total of 110 "overnighters" on 30 railroads offer shippers late afternoon closings with first-morning delivery of l.c.l. or first-day placement of carload freight between points 300 or more miles distant. These fast freight trains cover a total of 38,379 mi. daily.

The list does not include a number of trains which perform a like service between points only slightly less than 300 mi. distant, such as St. Louis and Kansas City; Chicago and Evansville, Ind.; or Florence, S. C., and Richmond, Va. The list for 1949 shows an appreciable increase over that of a year ago, when 28 railroads operated 95 "overnighters" covering 32,407 mi. daily.

Railroad	Train No.	From	To	Mileage
A.T.&S.F.	39	Chicago	Kansas City*	449
	37	Dallas	Galveston	362
	40	Galveston	Dallas	362
	37	Kansas City	Oklahoma City	346
	40	Oklahoma City	Kansas City	346
A.C.L.	215	Waycross	Montgomery	314
	211	Florence	Jacksonville	346
	209	Atlanta	Jacksonville	350
	210	Jacksonville	Florence	346
	214	Jacksonville	Atlanta	350
B.&M.-N.Y.N.H.&H.	M-7	Portland, Me.	New York	338
C.N.	444	Toronto	Montreal	334
	495	Montreal	Toronto	334
C.P.	904	London	Montreal	450
	905	Montreal	Toronto	340
	910	Toronto	Montreal	340
	955	Toronto	North Bay	339
	905-911	Montreal	North Bay	357



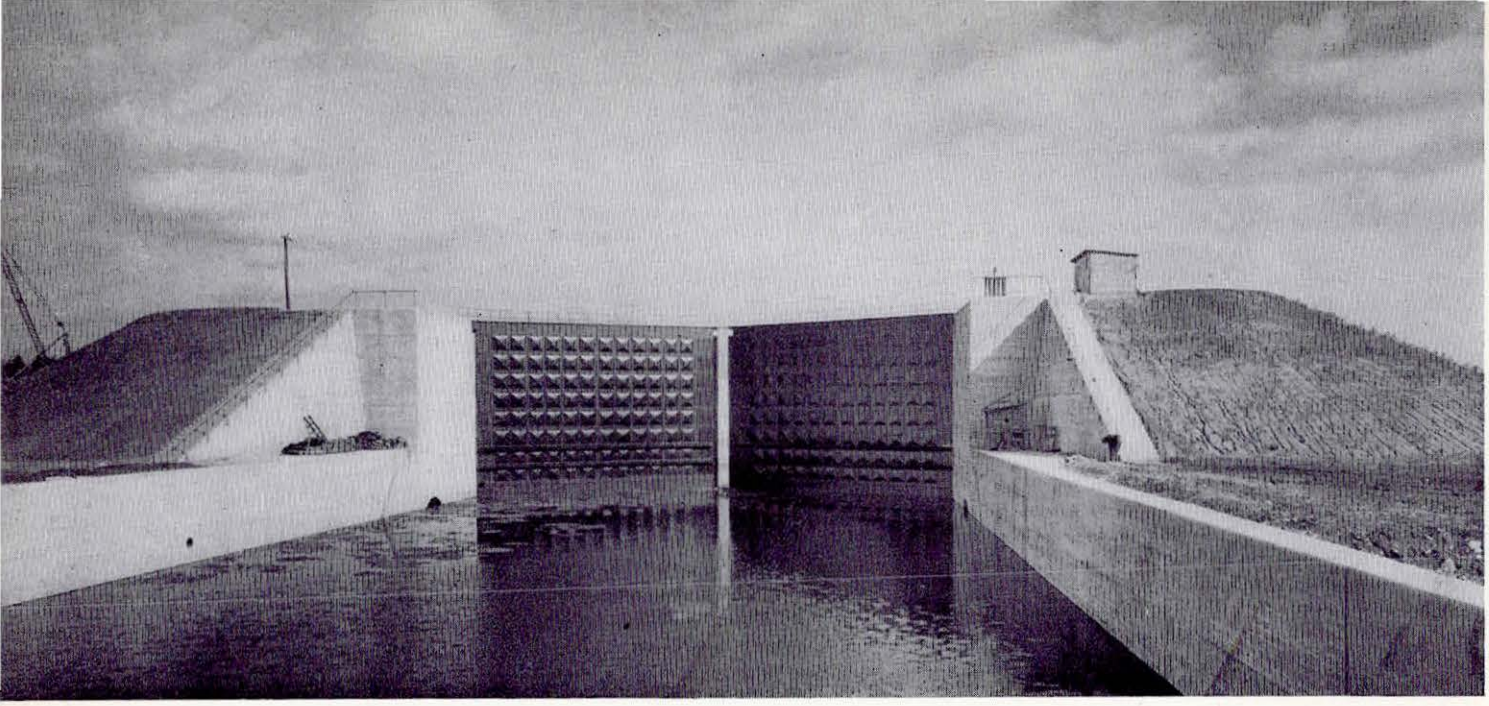
FAST FREIGHT FLEETS

Railroad	Train No.	From	To	Mileage
C.&O.	40	Chicago	Detroit	336
	41	Detroit	Chicago	336
C.&N.W.	117	Chicago	Boone	340
	484	St. Paul	Milwaukee	311
C.I.&L.	71	Chicago	Louisville	325
	70	Louisville	Chicago	325
C.R.I.&P.	OMX	Omaha	Tri-Cities**	329
	91	Tri-Cities**	Omaha	329
	93	Kansas City	El Reno	381
	96	Kansas City	Tri-Cities**	336
	91	Tri-Cities**	Kansas City	336
	390-96	St. Joseph	Tri-Cities**	317
	990-933	Kansas City	Cedar Rapids	337
F.E.C.	345	Jacksonville	Miami	366
G.T.W.	529-537	Detroit	Chicago	316
	536-530	Chicago	Detroit	316
	2nd 484	Chicago	Port Huron	334
	490	Chicago	Port Huron	334
	535	Port Huron	Chicago	334
	537	Port Huron	Chicago	334
G.N.	405	Minneapolis	Grand Forks	329
I.C.	MS-1	Chicago	Memphis	527
	SE-1	Chicago	Carbondale	307
	SN-3	E. St. Louis	Memphis	313
	MS-2	Memphis	E. St. Louis	313
K.C.S.-L.&A.	77	Shreveport	New Orleans	313
L.V.	BNE-2	Buffalo	Bethlehem	359
L.&N.	71	Cincinnati	Nashville	301
	71	Montgomery	New Orleans	318
	73	Nashville	Montgomery	305
	58	Nashville	E. St. Louis	324
	79-179	E. St. Louis	Louisville	321
M.-K.-T.	275	Kansas City	Oklahoma City	343
	81	Dallas	Houston	339
	270	Houston	Dallas	339
	81	St. Louis	Parsons	387
	281	Fort Worth	Houston	327
	270	Houston	Fort Worth	327
M.P.	63-363-364	St. Louis	Memphis	328
	63-69	St. Louis	Little Rock	343
	71-173	St. Louis	St. Joseph	353

*Merchandise traffic only. **Davenport, Rock Island and Moline.

Railroad	Train No.	From	To	Mileage
M. P. (Cont.)	68	Pueblo	Hoisington	339
	61	Council Grove	Pueblo	472
	67	Dupo	North Little Rock	369
	361	Dupo	McGehee	417
	79	St. Louis	Fort Scott	323
	67	Longview	San Antonio	340
	60	Texarkana	Poplar Bluff	325
	73-75	Fort Worth	San Antonio	337
	74-72	San Antonio	Fort Worth	337
	62-173	Hoisington	St. Joseph	352
	77	Kansas City	Scott City	406
	74-66	San Antonio	Longview	340
N.Y.C.	NB-1	New York	Buffalo*	429
	BN-2	Buffalo	New York*	429
	BB-1	Boston	Buffalo*	494
	BB-2	Buffalo	Boston*	494
N.Y.C.&St.L.	CC-2	Chicago	Cleveland	336
	BC-1	Cleveland	Chicago	336
N.Y.N.H.&H.-P.R.R.	NE-1	Boston	Philadelphia*	330
P.R.R.	NW-88	Chicago	Columbus	308
	NW-85	Columbus	Chicago	308
	IL-1	Louisville	Chicago	305
	IL-2	Chicago	Louisville	305
St.L.-S.F.	37	St. Louis	Tulsa	424
	835	St. Louis	Memphis	305
	32	Oklahoma City	Springfield	303
	31	St. Louis	Joplin	333
St.L.S.W.	43	St. Louis	Pine Bluff*	398
S.A.L.	1st74	Columbus	Jacksonville	336
	87-99	Savannah	Tampa	345
	27	Hamlet	Atlanta	325
	88	Atlanta	Hamlet	325
S.A.L.-M.D.&S.	2nd 88-71	Macon	Jacksonville	311
Southern	73	Chattanooga	Meridian	300
	72	Meridian	Chattanooga	300
	54	Chattanooga	Louisville	316
	54	Chattanooga	Cincinnati	338
	53	Cincinnati	Chattanooga	338
	2nd 53	Cincinnati	Knoxville	308
	53	Atlanta	Jacksonville	331
	52	Jacksonville	Atlanta	331
	52	Memphis	Chattanooga	316
	53	Chattanooga	Memphis	316
	59	Atlanta	Meridian	340
	57	Potomac Yard	Spencer	324
	155	Spencer	Atlanta	307
S.P.	374	San Francisco	Los Angeles*	470
	373	Los Angeles	San Francisco*	470
	370	Los Angeles	Tuscon*	545
U.P.	259	Omaha	Julesburg	360
Wabash	96	St. Louis	Fort Wayne	342

*Merchandise traffic only.



FIGHT FOR FREIGHT IS ON

Many of the railroads' competitors appear to flourish, abetted by cost lags, decentralization and rate umbrellas

In the recession or readjustment period now under way, the total movement of freight by all carriers probably is declining. In addition, the concerted drive by industry to cut down long-hauls and cross-hauls — given impetus by the current confusion about the legality of basing-point pricing — may be effecting a permanent reduction in the country's ton-miles in relation to production. But the railroads are particularly affected by substantial diversion of traffic to private, contract and common carrier truck and barge transportation. Since the railroads are the only genuine common carriers—with no opportunity to turn down unattractive business nor to discriminate against customers who discriminate against them—the *average* cost of railroad service is kept at a much higher level than it would be if they could select the traffic they will move, as their rivals do.

The rate of diversion is said by some observers to be higher than at any previous period. It is attracting widespread public attention, not so much because of the tonnage involved but because of the dramatic nature of the transport shifts — apples trucked from Washington to Ohio, citrus fruit by highway in 39 hours Florida to Chicago, and haulage of heavy steel products where none existed before.

As of about the middle of 1948, the railroads' proportion of total intercity freight traffic was just about what it was in 1939. In short, after taking over some of the traffic of their competitors during the war, the railroads now have returned to their prewar status and face the threat—as they did in 1939—of a possible further decline in relative importance as freight carriers. There has never been any reason to believe that it could be otherwise, except in wartime, for there has been no mitigation whatever in the nature and extent of the subsidization of the railroads' competitors. Indeed, the handicap suffered by the railroads is worse, for, while the costs of their roadways have increased greatly, their competitors have passed inflationary increases along to the government which owns and maintains the highways and waterways.

Little Choice for Management

One would gather from comments of the day that railroad management last year faced a choice whether it should raise the general level of rates. It had no choice. Its chief job is to keep its properties going. Having to bear the whole brunt of inflation from revenues, its only recourse was to increase the rate level. If the increase was more than the railroads' competitors had to make, that is without question a result of the simple fact that when your rival gets something free, and you don't, and your cost of doing business doubles, his advantage over you has also doubled. If, in 1939, trucks and barges were taking traffic from the railroads by capitalizing on pick-and-choose rate advantages, how much greater is their ability to do so now!

Facing page—Expensive tax-built facilities like this Corps of Engineers' installation in Illinois encourage increased use of private and contract barges

Above—Uncle Sam not only subsidizes the right-of-way, but for the federally operated Inland Waterways Corporation helps pay for "rolling stock" and operation costs

But there is a rift in the clouds. Now that there is little vestige of a car shortage, public subsidy enthusiasts have lost a potent, ready-made excuse for voting new funds to railroad competitors. State governments have become aroused about the damage done to their highways by heavy trucking. The railroads may achieve more rate flexibility and be able to remove the rate umbrella by which they now involuntarily allow their competitors to pick and choose the profitable shipments. (The average revenue per ton-mile of the railroads is still far less than that of motor carriers. The Interstate Commerce Commission declared in its annual report that the barge lines flourish by concentrating on the traffic which can be given cheapest terminal handling, and by neglecting less-than-barge-load lots.) Finally, the termination earlier this year of the Office of Defense Transportation's minimum carload order should return to the rails some of the traffic which shippers said they had to divert to trucks because their customers were not able or willing to order in lots sufficient to make legal carloads.

There is no doubt that trucking is enjoying an unprecedented boom. It has regained and now surpassed its prewar status relative to other carriers. Common carrier fleet operators handled an all-time record traffic in 1948; their tonnage climbed to an index of 230 (1938-1940 average = 100), compared with 206 in 1947. Contract truckers are growing at an even greater rate. Whereas common carrier lines attract principally the railroads' merchandise traffic, the "gypsies" make inroads on carload traffic moving in heavy volume—considered a staple of railroad tonnage. In its 1948 annual report the I.C.C. observed that "the truck lines are now in a more favorable strategic position in relation to the railroads than generally has been the case in the past."

Some of the diversion reflects faster transit time and less stringent packing requirements by truck; most of it is due to new rate advantages. A recent survey by an investment house showed that, on the whole, a 5 to 15 per cent rate differential exists country-wide in favor of trucks. This difference applies only, of course, on the traffic which the trucks actually move; many movements under 5,000 lb., for example, they rate higher than do the railroads; "balloon" freight they won't move at all. But the fact that the railroads have had to ask for uniform horizontal increases on all but a few bulk commodities, rather than raise rates on specific commodities in strict relation to competitive conditions, has given the truckers a rate "field day" comparable to that enjoyed immediately after World War I.

This state of affairs has produced significant contrasts, only a few of which need be cited here: Rates on fresh meat from Indianapolis, Ind., to virtually all points on the Atlantic seaboard are now 20 to 30 cents less per 100 lb. by truck than by rail, and they include refrigeration. Truck rates on lard, on the other hand, are 10 to 12 cents higher than by rail because the highway carriers wish to carry only the highest-paying commodities. One packer is shipping the entire output of three of his Michigan and Ohio plants to the East Coast by truck. A large packer is using highway for shipping 60 per cent of his production at Chicago, moving much of it as far as the Pacific Coast in his own trucks.

A medium-size steel company, which in 1939 moved 30 per cent of its finished product by truck, now routes 65 per cent thereby. Trucks now handle as much as a third of the output of some of the country's largest prime steel mills. A textile firm in New York asserts

that the railroads charge $1.25 per 100 lb., with 30,000-lb. minimum, to move cotton cloth from Greenville, S. C., to Providence, R. I., while the trucks will take it for $1.20, with a 20,000-lb. minimum. Some highway operators are planning a service which will take textiles from the Carolinas to the West Coast in four days, at rail rates or less. Shipping fish from the Pacific Northwest to New York by truck is said to be $750 a carload cheaper than by train. The Department of Agriculture says that in 1948 nearly 69 per cent of all livestock moved to market by truck—the equivalent of 779,000 carloads. Railroads hauled only 357,000 carloads.

There is some doubt whether livestock pays the railroads, but in the view of certain large haulers at least, there can be no doubt about the profitability of fruit and vegetables for the long haul. No accurate figures are available, but it is estimated that about 50 per cent is now moving by truck, compared with 15 per cent in 1932. While (up to March 6) the total movements of citrus fruit out of Florida this past season increased by at least 13,500 carload equivalents, the movement by rail was *down* 680 carloads; trucks captured all the increased movement—and then some. Total movement was 61,281 equivalent carloads, of which 33,615 cars went by rail and 27,666 cars—or 45 per cent—by truck.

The outlook for a continuation of the trucking boom is mixed. The highway operators are getting together on a national scheme of trailer interchange which is designed to cut their costs and increase their penetration of very long-haul traffic. Continued softening of state weight and size restrictions would help that trend. During 1947 alone some 23 states "liberalized" restrictions on trucks, and, it is reported that the trend continued unabated during 1948. The cumulative effect was undoubtedly reflected in the decrease in operating ratio of I.C.C.-reported motor carriers from 94.2 in the first nine months of 1947 to 92.0 in 1948.

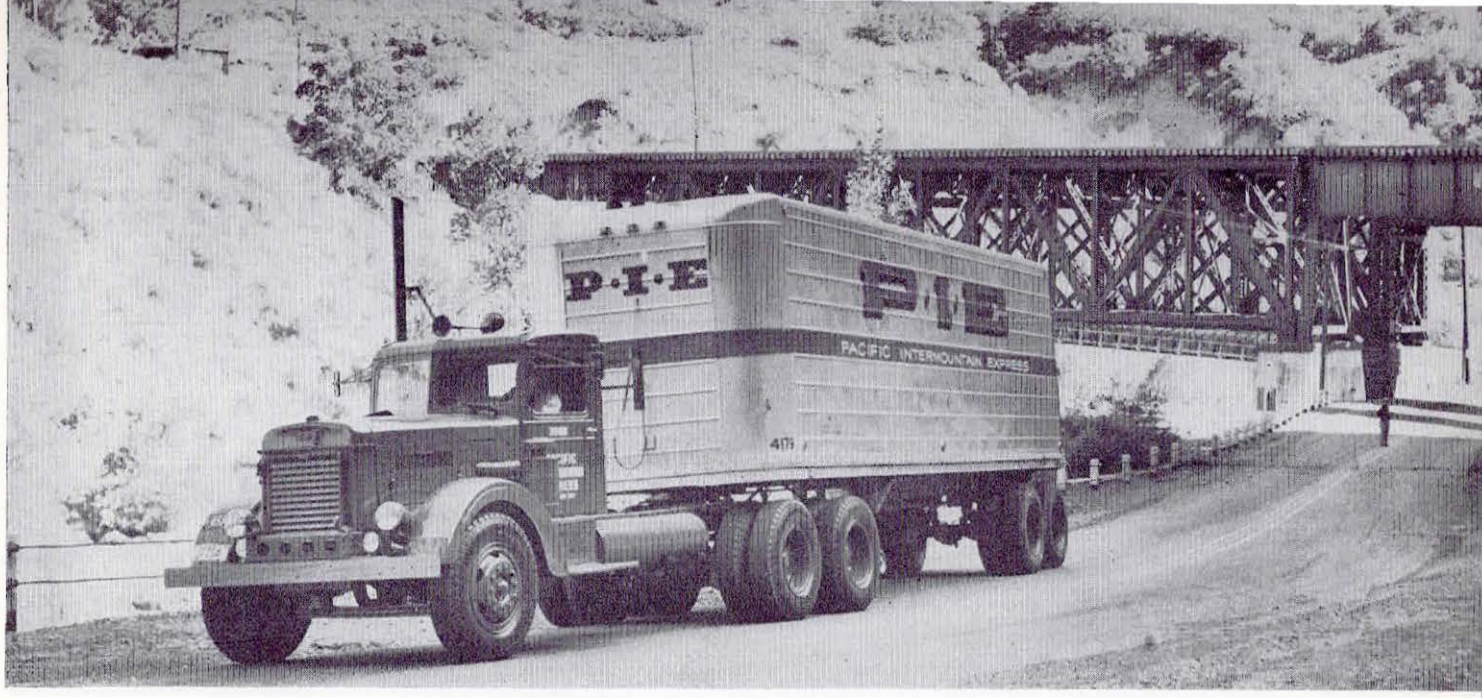
Since 93 is considered a good practicable ratio for trucks—with no fixed charges on roadway investments to be paid out of net earnings—the ability of the trucks to "play around" with rates is greater than before. This is indicated by the fact that, while gross revenues went up 31.3 per cent in 1948, net operating revenues rose 80 per cent.

On the other hand, to produce 16.3 per cent more traffic in the first nine months of 1948, the truckers had to run up 21.4 per cent more tractor-miles—indicating either longer hauls or smaller loads.

Transcontinental motor carriers recently received I.C.C. approval for a 9 per cent rate boost. Other increases by the truckers may be in the offing. Surely the powerful teamsters' unions will not lie quiescent. And the states are beginning to discover not only that the present weight restrictions on trucks are too high and the fees too low, but, further, that the truckers are paying practically no attention to the generous limitations now on the books. Illinois, for example, is now weighing in trucks at strategic points and finds more than 40 per cent overloaded. Drivers used to pay nominal fines and drive off, with a net profit, but now the police make them unload. One trucker overloaded 200 per cent above his registered limit caused at least $15,000 worth of road damage in Pennsylvania recently. If there ever was a propitious time for political action to raise fees on heavy trucking to a compensatory level, it should be now.

Barges Want the Big Volume

Barge operators are also bargaining on a pick-and-choose basis. They don't like anything but bargeload cargo, and even the "social benefit" Federal Barge Lines was recently accused of neglecting the package freight on the back rivers for the "big stuff." Since the war, the for-hire operators have raised less-bargeload rates in proportion to railroad rate increases, but have



raised bargeload rates less than half as much percentagewise.

The inland waterway operators handled a record volume in 1948. Their trade association says that, on the Mississippi system alone, they did 30 per cent better in 1948 than in 1947 and that their business is running much higher in 1949.

In addition to gaining by pick-and-choose tactics, the water carriers enjoy constantly better rivers and navigation aids—at no charge at all—as the Army Corps of Engineers labors in their behalf. A host of new entrepreneurs have entered the field with cheap war surplus landing craft. Towboats have been vastly improved in efficiency; one 1,200-ft., 11-barge tow of the Federal Barge Lines, with but one propelling craft, made 17 knots downstream several months ago, with relatively low fuel consumption. River transport for truck trailers, now in the experimental stage, may make waterways a threat to traffic of the railroads which they do not now touch.

The freight forwarders are getting bigger, too. Since they have been placed under regulation, entry into the field has become more difficult, and competition is definitely less severe, but business is growing and most customers think the service is good. It is still a moot point whether forwarders are competitors of the railroads or contributors to their welfare. They take away much of the best-paying l.c.l. traffic between the busiest points, and may have a great deal to do with the fact the l.c.l. left generally fails by a big margin to cover full costs. They claim, however, to give the railroads the carload movement of a great deal of traffic which otherwise would move by truck, and there is no doubt that most railroad traffic staffs court forwarders' business and consider their pool cars profitable.

Air freight has developed in fits and starts since the first movement by "aeroplane express" (not the American Railway Express, whose first air movement antedates it) in April, 1919, when Society Brand Clothes shipped a lot of men's suits 58 miles from Kankakee, Ill., to Chicago. Not much air freight is competitive with the railroads—yet. For the most part it has developed brand new business—long-haul flower movement, samples for style shows, "market-primers" for the fruit and vegetable trade, etc. But the rates are going down steadily. Last year, United Air Lines cut freight rates 33 1/3 per cent, and American Airlines, 25 per cent. Some air freight rates (airport-to-airport) are undercutting first class railway express (door-to-door)—Delta Air Lines advertises that it charges $3.07 per 100 lb. between Chicago and Cincinnati, compared with $3.80 for rail express, and $5.55 between Chicago and Chattanooga, Tenn., compared with $5.56 by express.

The railroads, for the time being, are definitely barred from entry into the air freight business, the Kansas City Southern having been the last to discontinue its air transport subsidiary in February. Subsidiaries of the Illinois Central, Erie and Chesapeake & Ohio have been denied the right to operate as forwarders by air, solely on grounds of railroad backing, although 55 other freight forwarders have been permitted to handle air freight. A nationwide hook-up of air-freight lines and truckers is reported to be in the making which may, of course, greatly expand the profitable operations of the air carriers.

But the country—if not the shipper—must pay a stiff price for air freight movement. The Air Transport Association itself points out that it takes 2,626 employees to produce 100 million ton-miles by air, against 72 employees by rail.

To the only unsubsidized competitor of the railroads—the pipe line—there may come new company in the form of a belt conveyor across Ohio for the movement of coal and ore. The carriers are watching the development closely, but, as long as it is privately financed and pays taxes on its right-of-way, it will have to show its economic advantages in order to survive.

PROGRESS IN PERFORMANCE

Smith the Shipper

Smith the Shipper looked out his office window and was proud of what he saw. Nice fleet of private trucks to take the expensive, good loading stuff to the steady customers. Down on the municipal dock nearby, the Missi-Ohio Scow Company's new Diesel towboat was playing around with his barges. Just fine for the heavy stuff, when the river's not too high, not too low and not frozen.

And he spied Trans-Everything Motor Line's tractor-trailer-trailer coming in the drive to call for some high-value shipments to Way Out West. Only flaw was the Atlantic & Pacific railroad's p. & d. truck hadn't arrived yet to pick up some stuff that Trans-Everything rated four times first class on a "give-it-to-the-railroad" basis.

Then, in drove what looked like a p. & d. job—but bearing no A. & P. legend—just USTA in big red-white-and-blue letters. Something new. Out to the shipping room to see what's what. Driver in new uniform.

"Where's the l.c.l.?" the driver asked. Smith pointed it out.

"Not that—we're not carrying that stuff anymore now that the people own the railroads; too many claims."

"The people?"

"Yeah, the United States Transportation Authority. Ya never heard of it? And, by the way, bureau chief's going to give you the works. Our Department of Investigatory Snoopery saw one of your trucks go past the 12-mile limit. You know ya gotta call the authority to move anything what ain't in clause 2,456 of the Penal Code for Commercial Shippers—'Goods to be moved not more than 12 miles from origin, or anything which the authority may reject as unprofitable unfeasible or awkward, may be conveyed in owners' vehicles.'"

"I—I," put in Smith.

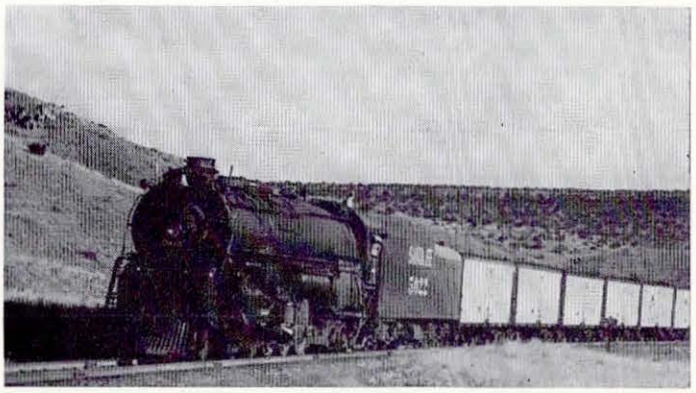
"Don't interrupt, mister. And another thing, those cute little damage claims you keep writing the chief about. What a laugh! We haven't paid claims since the bankers got liquidated."

"Why, you—" bellowed Smith, reddening.

"Relax, Bud. You'll get used to the new management. And you'd better vote for that billion and a quarter bucks to cover our deficit, the chief says, or you boys'll only get switched once a week instead of twice. You'd rather vote right than take a fourth rate boost this year, now wouldn't you?

"So long, Pop, see you next month on 'sailing day'; and you better have them packages ready, too."

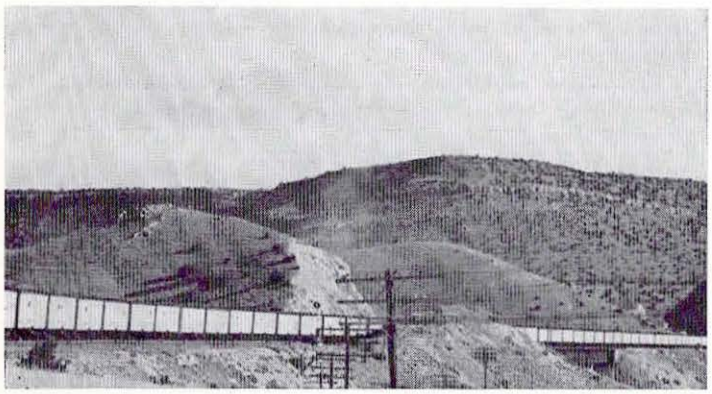
Smith felt sort of queer all over, steadied himself on the water cooler, and called desperately for his 45-cal., when . . .



Sees It Through

. . . off went the alarm and Smith the Shipper flew from his bed without a shred of regret. What an awful dream. Why that—! All through breakfast he thought what cool, witty things he'd say to that bureau chief (if he ever saw one), such as, "better see what you can do for me, son, or Trans-Everything gets the . . . "; but a tough grape-nut recalled that, with bureau chief running things, Trans-Everything might not be around anymore.

Riding down to the office on the A. & P.'s 8:11 (annual deficit, $10,000), Smith got to thinking about how much better A. & P. looked on the letter board than the Authority stuff, and what a man could do to keep it there. If the government controlled the railroads, all the other carriers would go in the bag, too. Might as well take the "traffic manager" off the door; he'd just be a billing clerk.



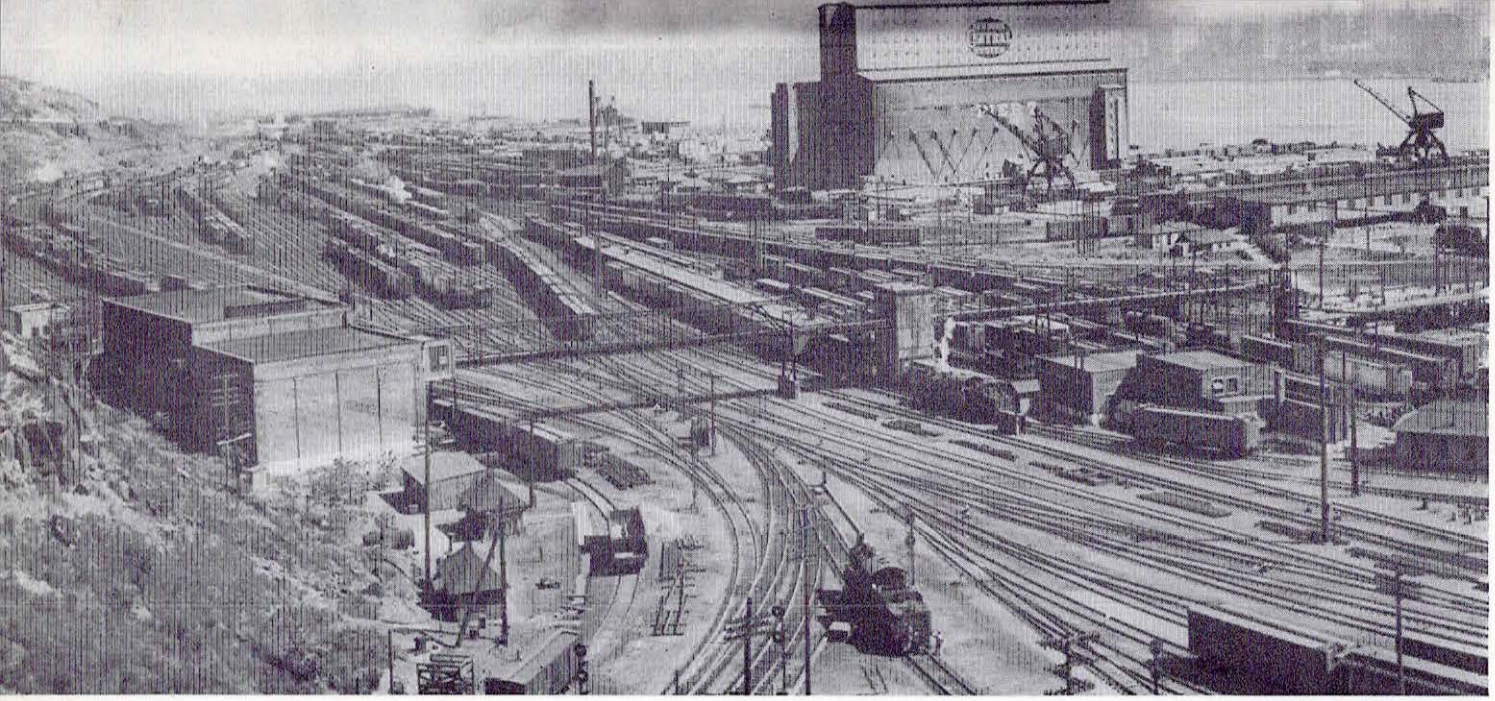
If the government takes over the railroads it would be because: (1) they can't keep up their facilities and the government money is the only way out—like the local trolley and bus companies that went municipal; or (2) because the unions demand it.

Not much chance of (2) unless Whitney gets the upper hand; the unions threaten, but only during wage fights. So it boils down to enough money for the roads. And enough money means, first and foremost, enough paying traffic to make possible the volume efficiency of railroading. And this, in turn, means no raids on railroad traffic by government-supported competition or by keeping the railroads helpless under horse-and-buggy regulation.

Pretty simple solution, Smith thought, but who would do anything about it? The railroads? Nobody listens to them; besides, they're prejudiced. The "great mass of the people?" Sounds good, but they're really not interested. Government? Hardly, look what they're doing now. Private enterprise? It ought to, but, on the the whole, it's still looking for special advantages."

Just last year the shippers had a lot to do with putting across the Mahaffie Act; the change in the Railroad Retirement Act to graduate taxes for unemployment, and (over the President's veto) the Bulwinkle bill. Shippers have a great power. Men like Smith of General Mills, Braden of National Distilleries, Orr of Pet Milk, and Schwietert of Chicago Association of Commerce & Industry are but the most vocal of that large body of industrial traffic men who behave like statesmen, who have pointed the way which must be taken, if socialization is to be forestalled.

Smith straightened up. "I feel better, now," he thought, as he hopped off the train before it stopped, and didn't get a summons either.



RAILROADS ARE TAXPAYERS

The Shippers' Stake in Unshackled Carriers

Railroads and other common carriers if allowed to make competitive rates could meet the growing menace of private carriage

It may sound a paradox to the uninitiated, but every practical railway man knows it to be, broadly speaking, a fact that, high as the rates for *retail* traffic are compared to the *wholesale* rates, they would need to be even higher, were it not that the profitable nature of the *wholesale* traffic enables the railway to forgo almost all—in some cases unquestionably more than all—profit on the *retail* business.

—Sir W. M. Acworth, eminent British authority on railroads

The greatest threat to the welfare of the railroads and other common carriers—and their customers, too—is the increasing diversion of traffic from them to the private truck and boat fleets of large manufacturing and commercial companies, to producer-dominated pipe lines, and to contract carriers whose conditions of operation and rate-making are so similar to those of private fleets that they properly could be classed with "private carriers."

This diversion has been going on for decades, but never before at the rate and in the magnitude now apparent on every hand. It has now reached the point where it is endangering the welfare of every shipper who, because of the size of his business or the nature of the commodities in which he deals, is bound to the continued use of common carriers. This is so not only because, under present conditions of regulation and subsidy, he suffers a competitive disadvantage in the marketing of his goods, but, more important, because the erosion of common carrier railroad traffic, at least, will, because of the importance of fixed costs, serve only to increase further the rates he pays and, thus, his commercial handicaps.

The long-range remedies for this chaotic state of affairs are easily determined even if, because of political pressures, they are not easily applied. There is ample reason to believe that the boom in private carriage springs from four main causes:

(1) Continued and increasing subsidization of the costs of right-of-way for trucks and inland vessels;

(2) Unequal taxation of private and contract carriers as contrasted with common carriers in general and the railroads in particular;

(3) Rigid regulation of common carriers which makes them "helpless sitting ducks" for the raids of private carriers; and

(4) Vulnerability of common carriers to increases in wage rates and wasteful "featherbedding."

All four of these basic causes could be readily remedied by the very government bodies which brought them about in the first place. What hath been given can be taken away. The sole question is: Will the authorities bestir themselves more in the future in the interest of the majority of the country's shippers, who must stick with the common carriers, or will they, as

they have until now, prefer to give in to the noisy pressures of organized minorities of commercial interests? The answer would appear to lie with the majority of the shippers who, without a doubt, possess the *latent* power to remedy their woes but who, thus far, have remained relatively silent.

But the situation is too serious to wait until long-range justice can be done. An exceedingly important fact is that, once a vested interest has been created in a private fleet of trucks or barges, the equipment bought and plants modified to use them, it is difficult for common carriers to regain the traffic, even with later drastic reductions which bring their charges below the full costs of common carriage.

The Time to Halt Diversion Is Now

There is reason to believe that there lies at hand immediate means by which to help arrest and reverse the trend of diversion to private carriage. It is the short-range weapon to use while waiting for the yeast of majority pressures to ferment and produce a cure for the political handicaps of the common carriers. It is, in broadest terms, the granting of greater flexibility to regulated transportation to quote prices which will compete successfully with private movement.

Obviously, common carriers would not use this flexibility in such a way as to endanger their solvency. To meet this latter condition, it might be necessary in some instances for them to resort to rate-making practices which could be described properly as "discriminatory." For example, to meet the threat of private carriage by a large shipper, the railroads might have to grant him low rates, based on the volume of his offerings, which, to avoid bankruptcy, they could not accord to *all* of their customers.

The first impulse of the shipper who cannot resort to private transport would doubtless be to denounce a scheme of greater rate flexibility for common carriers as so wholly inequitable to him as to merit his complete opposition. He and his predecessors have fought discrimination of place, commodity, distance, and person since the first freight rate was scribbled on the first manifest. Here, he would say, is personal discrimination of the rankest sort. "He's bigger than I, so you give him a better break!"

But, just a minute, Mr. Shipper "A." Because Shipper "B" is bigger than you are (or at least differently situated) he already has the advantage in being able to own private fleets of trucks or barges or to make bargains with contract transporters which you cannot make.

No amount of shackling of the rate-making powers of the common carriers in behalf of the noble principle, anti-discrimination, will remove *from* him one jot or tittle of his present advantage over you. Indeed, the fact is that this shackling only *magnifies his power* because, clearly, it holds back the common carrier from fighting for his traffic.

It is, of course, no light matter to abandon, even temporarily, a fight for equal treatment of all. The shipping fraternity, since the Granger regulations of the Seventies, has fought hardest of all against *personal* discrimination in rate-making. In days of monopoly by the railroads this antipathy was well-founded.

For the most part, it worked to the advantage of the railroads themselves, because it protected them from suicidal surrender to the forces of the "trusts," as was most dramatically demonstrated in their early relations with Rockefeller and his Standard Oil.

As long as government subsidy did not provide almost-free highways and fully-free improved "built-in" waterways, the common carrier, with its variety of traffic and relatively balanced movement, could underprice private carriage in almost every situation—except for very short hauls, retail distribution and Great Lakes movement of coal and ore. The shipper did, in fact, receive protection against his competitor through regulation which restricted the right of carriers to grant to

individuals rate concessions on grounds of "bigness" or threats of traffic withdrawal alone.

But that protection has now, by force of circumstances well known, been—to some extent—transformed into a liability. The times call for a complete change of mind. The public regulation of rate-making has never, at any time, been "scientific" (in the narrow sense of that term) and is faulty in direct proportion to the degree to which it is fixed or traditional. It is—to use a word much abused by the "left-wingers"—a dynamic force, a control of a pricing mechanism which must be realistic and, hence, constantly changing.

"Floating Mass of Relativity"

Possibly the greatest advantage which private and contract carriers possess over the common carriers—aside from the long term political aids already cited—is their ability to pick-and-choose commodities and hauls which make for the greatest savings over carriers' freight rates, in the case of private transportation, and for the greatest profits, in the case of contract carriers. Even firms which go in for hauling their own freight frequently continue to patronize the common carriers for poor-loading commodities, for small lots and for consignments to isolated points. Contract truckers, of course, are free, under the rate umbrella forced by regulation on the common carriers, to shop around for the "juiciest" kinds of business and make contracts which leave to the common carriers the "cats-and-dogs."

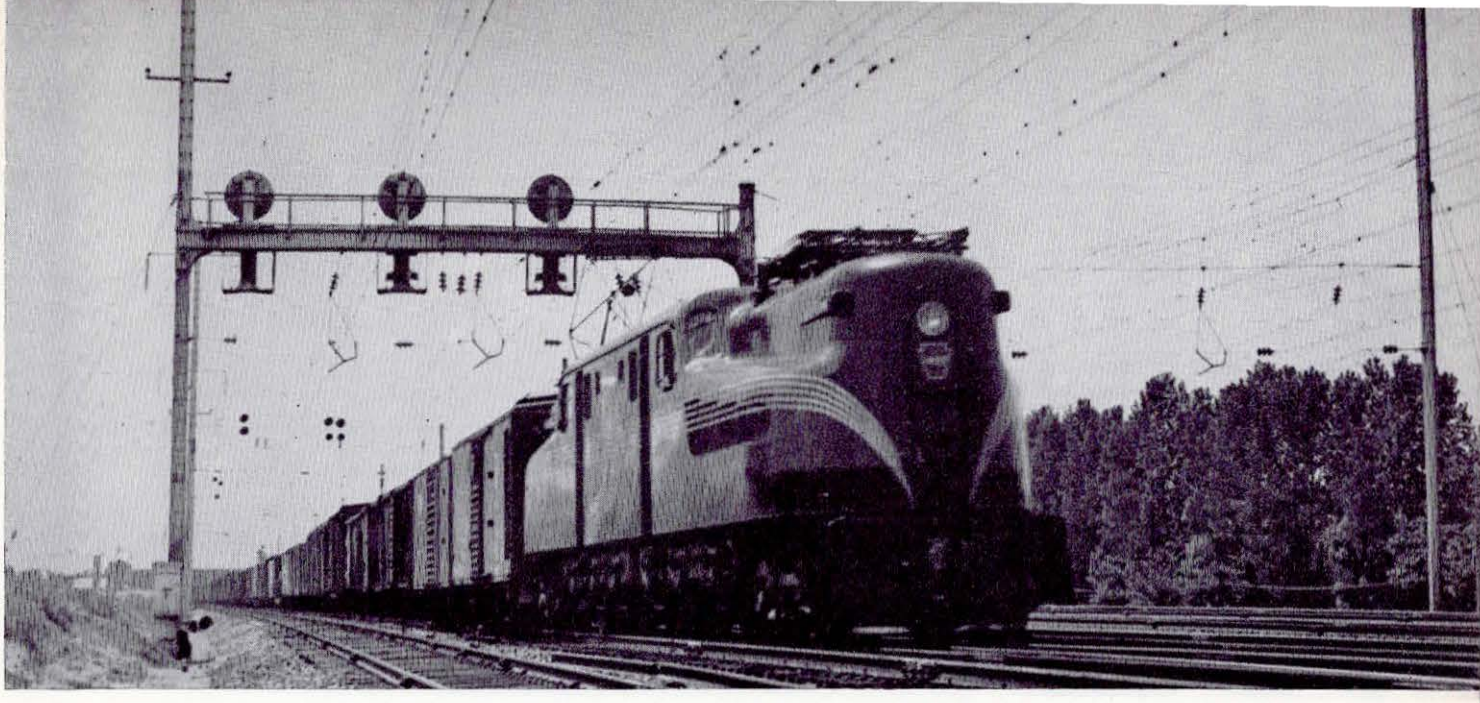
This freedom is not allowed the common carriers under the concepts of regulation venerated by the Interstate Commerce Commission and the state bodies. Sure, you can reduce rates, say the regulators, but if you do it for shipper A, there is no reason why you shouldn't do it for shippers B to Z; if you do it between points X and Y, there is no reason why you shouldn't do it between all points for which equal characteristics and conditions can be proved. And if you do it for commodity "one," you'll have to do it for commodities "two" to "ten," because they are all similar in shipping characteristics.

The late Joseph B. Eastman is reported to have remarked that "the freight rate structure is just a floating mass of relativity." This relativity—and the sanctity with which the regulators have surrounded it—is the chief obstacle in the way of the rate flexibility which the common carriers must have to do battle in today's arena.

Many railroad traffic men believe that, if the I.C.C. were to recast its thinking and allow the carriers to meet competition when and as they find it—within, of course, the existing limits of the law—no new mechanism in rate-making would be required. They believe that present-day commodity rates and exception ratings, on a carload, less-carload or "any quantity" basis, are sufficiently flexible to enable the railroads to stem the tide of diversion.

But to make this existing mechanism fully useful, it cannot be hedged about with rigid insistence upon "relationships," which dilute rate concessions to the point of diminishing return. For example: at one time gasoline moved at rates higher than crude oil because, among other things, it was worth more and bore a relation to crude in commerce that justified a higher charge. Then pipe line transport developed, and the railroads lowered the rate on gasoline. But because the commission insists upon the preservation of old relationships, the railroads must also maintain lower rates on refined products like butadiene and insecticides—for which there is no possible pipe line movement.

Much of the insistence of the regulators upon relationships is due, perhaps, to the fact that, in almost every case, there exist shippers or localities who see in the present arrangements some advantage for themselves and who protest vehemently any attempt of the common carriers to adjust their charges to new condi-



tions. Yet, if the common carriers' traffic is eroded, it is those shippers who will have to pay higher rates on what is left. *It is one thing to forbid common carriers to initiate discrimination, but something quite different to forbid to compete in discriminatory situations which others have created. The second of these prohibitions under modern conditions, may come pretty close to being a death sentence for common carrier transportation.*

"Meal-Ticket" Rate Making

There exist two distinct rate-making weapons which at least deserve study by the carriers, their customers and the regulators. The first—"agreed rates"—is a radical departure from present practice. Use of agreed rates would probably require a change in the laws affecting transportation, and hence they are not a quick remedy for the present situation. It is possible that the extent of competition between the railroads in this country would preclude their use here—even against private carriage—because they would bind shippers to one carrier. How, for example, would it affect reciprocal switching—so common west of the Alleghenies? Perhaps, on the other hand, agreed charges could be established by a group of railroads—as a body *vis a vis* other forms of carriers.

Agreed charges have been tried in Great Britain and Canada.* Since their inauguration in Great Britain in 1934, they have been successful in holding to the rails a large amount of merchandise traffic. In 1938, when 920 separate agreements were in effect, they accounted for more than 8 per cent of the British railroads' revenues from non-bulk freight and express traffic. By 1944 (latest year for which information is available) 2,202 agreements were in operation. Under them, the shipper generally agrees to make all of his intercity shipments by rail, at a flat charge per unit of weight, usually without regard to classification or extent of individual shipment.

In Canada, where, on the contrary, their chief application has been in the movement of bulk petroleum products and lumber, agreed charges—first allowed by law in 1938—have been effective in holding traffic to the rails which would otherwise have gone to private truck fleets. The rates are published and made known to interested parties in advance, and are subject—like ordinary rates—to suspension in the event of proved unreasonableness.

Agreed rates have been opposed in principle by the Canadian Industrial Traffic League, as being discriminatory in favor of large shippers. But firms entering into such arrangements—including league members—testify that the agreed charges give, among other things, the advantage of all-year-round rail transportation at rates comparable to limited-season water movement and rates based upon their individual costs and requirements, and not on vague general considerations. Proponents are quick to point out that all shippers always have the right to apply to the Dominion's regulatory body for agreed rates comparable to those of competitors similarly situated.

In effect, the agreed charge—as applied by the railroads in Canada at least—is essentially a type of rate-making similar to that with which a contract carrier in the United States deals with his customers. It is estimated that between 70 and 80 per cent of long-haul petroleum products traffic in Canada moves by rail under agreed charges, much of it from terminals at Great Lakes ports to bulk distributing stations inland.

A second suggested rate weapon of the common carrier railroads is the special concession based on multiple carload lots offered at one time and handled as a unit. This is most effective against water competi-

* Both this expedient and multiple-carload rates have been discussed in practical and up-to-date fashion by Dr. G. Lloyd Wilson in his book *New Departures in Freight Rate Making*, published in 1948 by Simmons-Boardman Publishing Corporation, based on a series of signed articles appearing in *Railway Age*.

tion, where the unit of carriage is very large. Such operations lack the flexibility of the contract trucker who, while demanding a large volume of traffic in the aggregate, perforce prefers offerings of truckload lots spread out for convenient handling to large quantities of freight dumped on him at one time.

It would be erroneous to say that the Interstate Commerce Commission has, without exception, stood out against multiple carlot rates, or that it cannot be convinced that they can lawfully be placed into effect, as Dr. G. Lloyd Wilson has pointed out. True, the commission repeatedly has ruled against such special rates since its first consideration of a multiple-car rate proposal in 1887 (1 I.C.C. 107)—always on the ground that they unduly favored very large shippers because their competitors could not conceivably produce enough traffic to fill the minimum requirements. But in the blackstrap molasses case of 1939 (235 I.C.C. 485, 498-499), the commission found that there was nothing wrong in rates established on the basis of quantity larger than the carload, as long as (1) the traffic moved as a single shipment, (2) the rates were designed to meet competition from a unit of transportation not limited to single carloads and (3) just and reasonable relations between the larger and smaller consignments of the same traffic were preserved.

The decision of the I.C.C. in that case was against the railroads' petition because it felt that the proposed rate was lower than necessary to attract the business from private barge movement—not because the commission continued to hold a prejudice against multiple car rates. Noting that its previous objections to them were "based on unjust discrimination in favor of large shippers," the I.C.C. said:

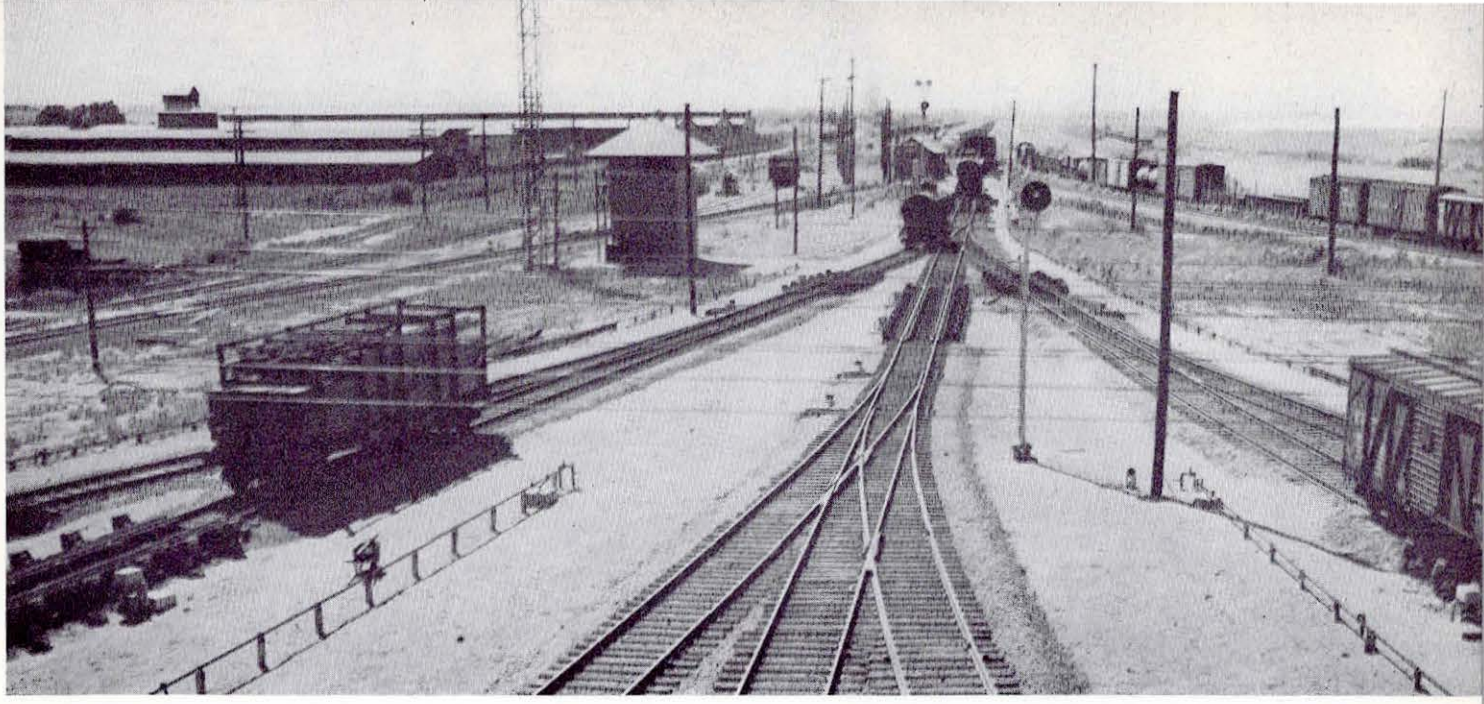
"Unjust discrimination, however, is a question of fact. Economic, industrial and transportation conditions have materially changed since those cases were decided.

"It is well settled that differences in the quantities shipped and a single shipment may afford a fair and reasonable basis for differences in transportation rates. In railroad transportation, these differences are currently recognized as between carload, less-than-carload, and quantity rates. In truck transportation, in addition to truckload and less-than-truckload rates there are so-called volume rates. In connection with the latter there is no requirement as to loading in a single truck. . . . Numerous joint rail-barge rates are now subject to minimum weights ranging from 300 to 1,500 tons insofar as the barge portion of the movement is concerned. The barge lines generally publish and maintain rates applicable on cargo quantities on most of the commodities they handle. Pipe lines publish quantity rates."

While, historically, there is nothing new about multiple carlot rates, they are foreign to the railroads' standard pricing mechanism. Many railroaders believe that their wide introduction would do more harm to the industry than the good to be gained by holding traffic through their introduction, because, through "relationships," the commission would require, or shippers would demand, their extension beyond reasonable grounds.

Rate men point out that certain bulk commodities have long been handled by the roads in train or block lots, a fact which was taken into account when the commodity rates therefor were made, even though charges were on a carlot basis.

The Anti-trust division of the Department of Justice and the Southern Governors Conference have demonstrated that government bodies sometimes possess an extraordinary desire to "protect" shippers in instances when no recognized shipper seeks their aid or supports their complaint. But the I.C.C. is not of this persuasion. It is to be hoped that it will meet the serious problem of diversion to private carriage with a desire to serve the majority of the shippers and not to protect an academic "paper" principle of anti-discrimination.



Taking the "Bugs" Out of Yards and Terminals

Railroads are pushing plans for improvements to minimize costly between-train delays—Modern communication systems and other technological aids prove helpful, but featherbedding trims benefits

Armed with technological advances in communications, with a variety of mechanical appliances, and with modern concepts of yard design and layout, many railroads have taken the offensive in a campaign to modernize their yard facilities and operations in the interest of faster, more efficient handling of cars through terminals — to the ultimate benefit of the shippers. This increased attention is being concentrated to a considerable extent on the larger yards, but there is a growing awareness of the importance of proper design, construction and maintenance for the smaller yards at intermediate points and even for industry and interchange tracks. Detracting somewhat from the bright aspect presented by these developments are the featherbedding practices of the labor unions, which make it difficult, if not impossible, to realize the maximum benefits of the improvements being made.

Shortcomings Recognized

It frequently has been said, with some truth, that railroads must operate their trains as fast as possible out on the line to make up for the time lost in getting cars through terminals. While fully aware of this situation, the railroads have been faced with considerations that have had a retarding influence on plans to build better freight yards. One is the great capital investment involved. Usually the conversion of obsolete and inefficient facilities into a modern layout requires complete revamping at great cost. Hence, when money for improvements is "tight"—and times have been few and far between when it wasn't—the tendency is to keep postponing these big jobs from year to year, with the intention of doing them "when times get better."

Another consideration has been the urge to put available money into projects improving the main-line portions of the railroads—an urge that is easily understandable, because it is only out on the line that the "end product" of transportation—i.e. net ton-miles—is produced. Partly as a result of such improvements the carriers have been doing an ever-better job of getting freight over the road. Freight-train speeds, *including time spent in yards*, are up 22.7 per cent over 1929; net ton-miles per train-hour are 77.5 per cent greater; and

The need for high standards of construction and maintenance for yard tracks is getting increased attention. Shown above, from a point down the incline, is the hump of the Burlington's retarder yard at Lincoln, Neb.

cars per freight train last year averaged 54.5 compared with 48.6 in 1929.

What has happened may be illustrated by comparing the handling of freight to the mass transportation of passengers on a metropolitan subway line. You put as many people as you can, from many different origins and bound for many different destinations, into the longest train you can run, and move it as fast as you can with the least practicable number of stops. At each stop, however, you forsake these mass-movement principles and strive for the greatest speed and flexibility in discharging and picking up passengers—which means adequate strategically located entrances and exits and the use of escalators where there are heavy movements between levels. It is in achieving this speed and flexibility at freight yards—stops—that progress on the railroads has not been all that could be expected.

War Traffic Starts Trend

The turning point in the freight-yard improvement picture came during the war. As freight traffic rose to successive new peaks congestion at switching and classification yards was an unpleasant reminder that plans for improvements had been on the shelf long enough. Indeed, a number of large yard-improvement jobs had to be prosecuted in haste so war traffic could be handled without serious delays. Continued heavy traffic when peace came, along with increasing pressure to render optimum service to shippers and to effect economies, had the effect of holding the spotlight of attention on yard improvements. Other developments that had an important influence in this respect were the adaptation of modern methods of communication—radio, public address systems and the teletype—to railway yards, and large increases in the pay of train- and yard-service employees, attributable in part to featherbed rules. It was found that the closer control over yard operations made possible by these communication systems permitted switching operations to be completed in less time by fewer crews, resulting not only in better service to shippers but also in important economies.

Above left—Talk-back loud-speakers make it possible for the yardmaster to keep in direct contact with the engine crews at all times, thereby minimizing idleness and waste motion

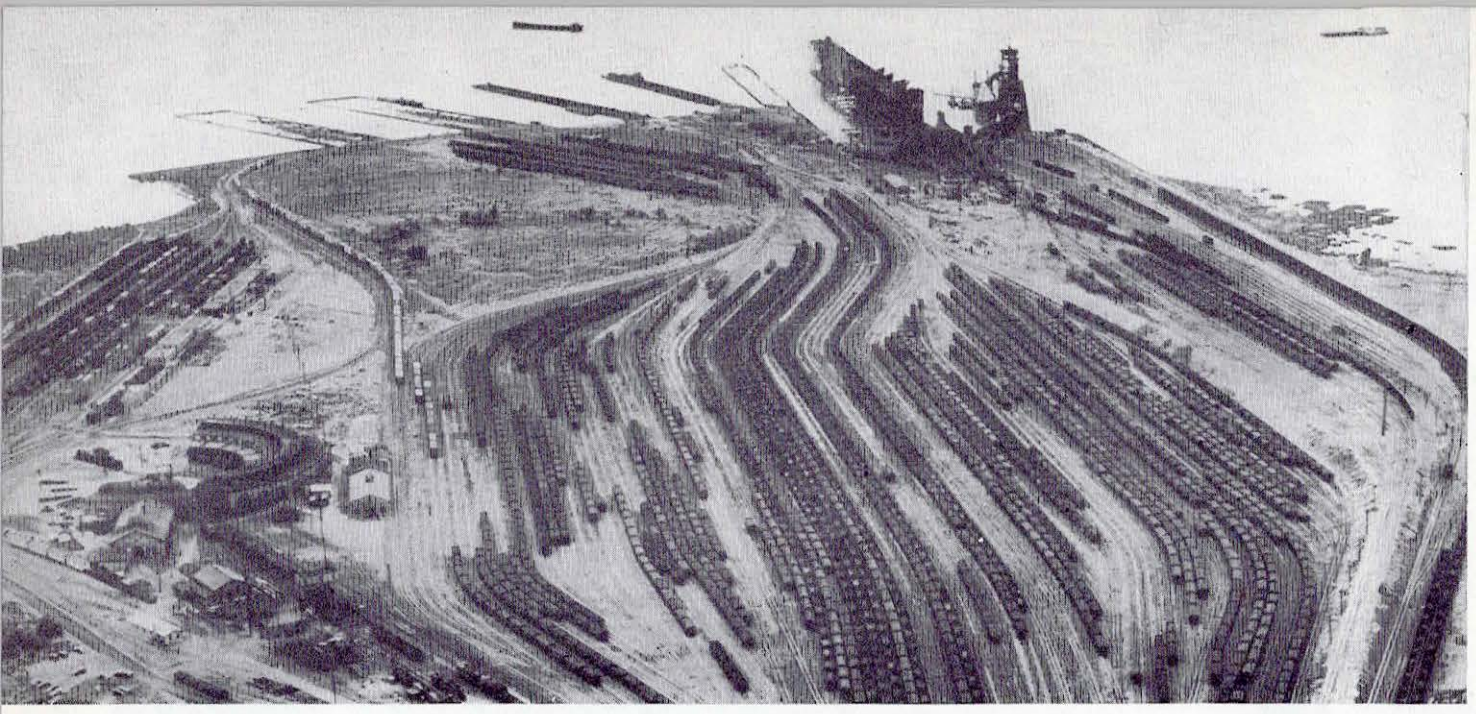
Above right—Constant vigilance and modern machines are needed to keep yards open in every sort of weather

Facing page—The newest hump-retarder classification yard in the country is that of the Santa Fe at Argentine, Kan., shown here under construction. Apex of hump is just to left of lower left corner. Light-colored area at upper right is unfinished departure yard

Yards Get Closer Scrutiny

These developments caused the railroads to regard their yards with a more critical eye. Yards of all types and sizes were included in this scrutiny. Primarily the objective was to determine what had to be done to raise switching and classification operations to the highest possible pitch of efficiency. In this approach the roads had the relatively new tool—modern communications—to keep in mind. They found that when this tool was applied to flat yards—either existing or new—a given amount of trackage could be made to do up to twice as much work.

Perched high in a tower for maximum visibility, and using a system of paging and talk-back speakers, the yardmaster was given a means of contact with switching crews that made it possible to minimize waste motion and idleness while they waited for instructions. When such a system is supplemented by teletype ma-



Above—Tidewater terminal yards of large capacity, like this one at Lamberts Point (Norfolk), Va., handle long trains with maximum efficiency

Facing page—Cars moving up the approach track to a modern hump must run a gantlet of devices and inspections. In this view of the approach track of the Union Pacific's new yard at North Platte, Neb., are shown, starting in the foreground, a station where oil is applied to the journal boxes, a device for detecting dragging equipment, and a five-man inspection station

chines for transmitting train consists, an interoffice communication system reaching key personnel, and complete telephone service through a PBX switchboard, the yard, although it may spread over an area of several square miles, is equipped to function as a tightly-knit unit.

There were many railroad men who were quick to perceive that the greatest potential of these various methods of communication could only be realized by using them in combination with a facility—the modern hump-retarder yard—that had long been recognized as the most efficient means of classifying freight cars at locations where conditions are suitable to its use. Communications in the modern sense permit the last ounce of efficiency to be realized from such yards, already highly mechanized with car retarders, power switch machines and signals.

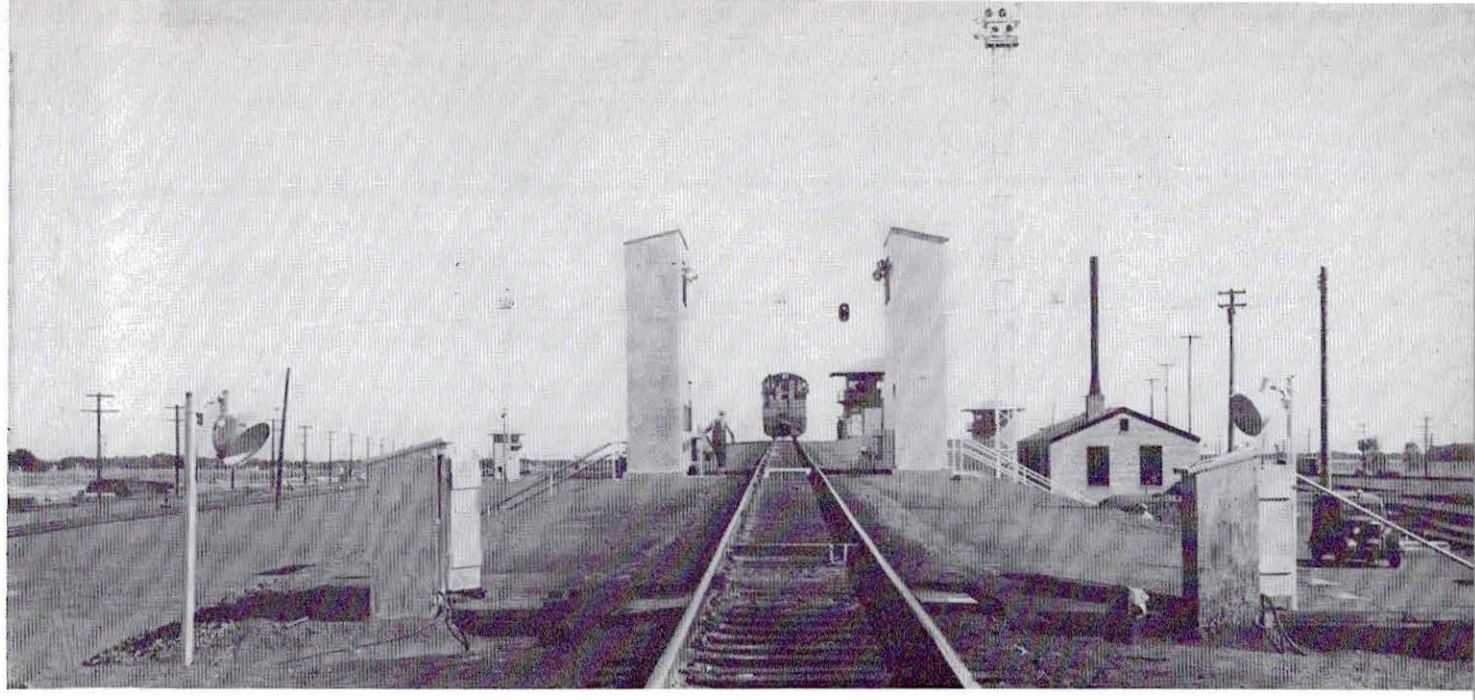
Figures Show Activity

Reflecting the new emphasis on the improvement of freight yards and terminals, construction work of this type constituted the largest single category of capital improvements in progress on the railroads during 1948, and this high rate of activity is continuing this year. This work ranges all the way from small jobs involving the lengthening or addition of a few tracks to multi-million dollar projects entailing the construction of complete new hump-retarder classification yards. Last year there were 77 projects of this type in progress costing more than $100,000 each.

The largest such project now under construction is a new hump yard the Canadian Pacific is building at Montreal, Que., at a cost of $8,000,000. The most recent project is a $3,600,000 hump yard announced late in April, to be built at Silvis, Ill., by the Chicago, Rock Island & Pacific. Among future projects—agreed upon by the parent roads but subject to final approval by the Interstate Commerce Commission—is one that contemplates extensive expansion and modernization of the facilities of the Houston Belt & Terminal. This undertaking, which will involve the construction of a 375-acre freight yard, will cost in the neighborhood of $3,250,000. In the table are listed most of the yard improvement projects costing $500,000 or more that have been completed since January 1, 1948, or which are under construction at the present time.

How the Hump Yard Works

The increasing popularity of the hump-retarder yard is indicated by the fact that at least seven of the projects listed in the table involve the construction of new yards of this type or the modernization of existing gravity yards. As built and equipped today, the hump yard is probably the most efficient medium yet devised for the speedy, economical and safe classification of freight cars. These new facilities employ assembly-line techniques. In its ultimate form, the hump-retarder yard is a "straight-line" or "continuous-flow" machine. By pneumatic tubes the conductor of an arriving train relays waybills from receiving-yard entrance to yard office in a matter of seconds. Often, before the road train has reached the yard, a teletyped consist has been received from the last terminal, and preliminary prepara-



DEFECT DETECTORS

tions have been made—even to the compilation of switch lists—for prompt disposition of the train on its arrival.

After the road engine is uncoupled and moved to nearby servicing facilities, the caboose removed, and the air bled from the train line, a yard locomotive moves the cars up the hump lead, under control of color-light signals operated by the conductor on the hump, or of direct radio communication between the engineer of the hump locomotive and the conductor. As the cars progress up the lead they move over a device which indicates the presence of dragging equipment by sounding an alarm, and then past an inspection station equipped with searchlights for illuminating the undercarriage and other parts of the cars. When defects are noted, an inspector in an under-track pit squirts whitewash on the wheels—by push button—or uses a loud-speaker system to indicate that the car should be classified to the repair track. If temperatures require additional lubrication of the cars for easy rolling, heated oil is injected into the journals.

It is necessary at this point to go back and trace the

IMPORTANT YARD CONSTRUCTION OR IMPROVEMENT PROJECTS NOW IN PROGRESS OR COMPLETED SINCE JANUARY 1, 1948

Road	Nature of Work	Location	Approximate Cost
A. T. & S. F.	Complete new retarder yard	Argentine (Kansas City), Kan.	.....
B. & O.	Improvements	Mill Creek yard, Cincinnati, Ohio	.....
"	Reconstruction	Cone yard, East St. Louis, Ill.	.....
"	New yard	Parma, Ohio	.....
"	Installation of car retarders	Willard, Ohio	$2,000,000
"	Construction of new yard	Barr yard, Chicago	3,852,000
C. P. R.	Complete new retarder yard	Montreal, Que.	8,000,000
C. & O.	Improvement and extension of yard	Danville, W. Va.	701,000
"	Improvement of yard and engine terminal	Shelby, Ky.	1,192,000
"	Enlargement of westbound classification and receiving yards	Russell, Ky.	5,070,000
"	Additional yard tracks	Parsons, Ohio	876,100
"	Additional trackage, retarders, loudspeaker system	Walbridge, Ohio	2,478,140
C. B. & Q.	Rearrangement	Murray yard, North Kansas City, Mo.	1,597,584
"	Rearrangement of yard	Daytons Bluff, Minn.	848,700
C. R. I. & P.	New retarder yard	Armourdale, Kan.	2,000,000
"	New retarder yard	Silvis, Ill.	3,600,000
L. & N.	Improvements in weighing, billing and mechanical facilities	De Coursey, Ky.	851,200
"	New assembly yard	Dent, Ky.	944,000
Mo. Pac.	Yard rearranged and enlarged	Kansas City, Mo.	509,000
N. Y. C. & St. L.	Relocation and expansion of terminal and yard	Fort Wayne, Ind.	2,000,000
St. L.-S. F.	New yard and other facilities	Springfield, Mo.	2,400,000
Sou.	Additions and alterations, including communication system and interlocking plant	Inman yard, Atlanta, Ga.	1,929,000
U. P.	Complete new retardar yard	North Platte, Neb.	3,400,000

As the yardmaster sees the yard of the St. Louis-San Francisco, at Tulsa, Okla., from a newly completed 60-ft. tower, illustrating how the yardmaster's command of the yard is enhanced as compared to his old location (upper center) in ground-level quarters

path of the waybills that had previously been transmitted by pneumatic tube to the yard office. There a switch list was prepared and copies transmitted by teletype to the humpmaster and to the operators of the car retarders and the power-operated switches at the entrance to the body tracks of the classification yard. The operators of both the retarders and the switches are stationed in towers where they have an unobstructed view of car movements down the incline. The retarders control the speed of the cars as they leave the hump so they will be properly spaced for switch operation and will move at the proper speed to enter the appropriate classification tracks and advance along them.

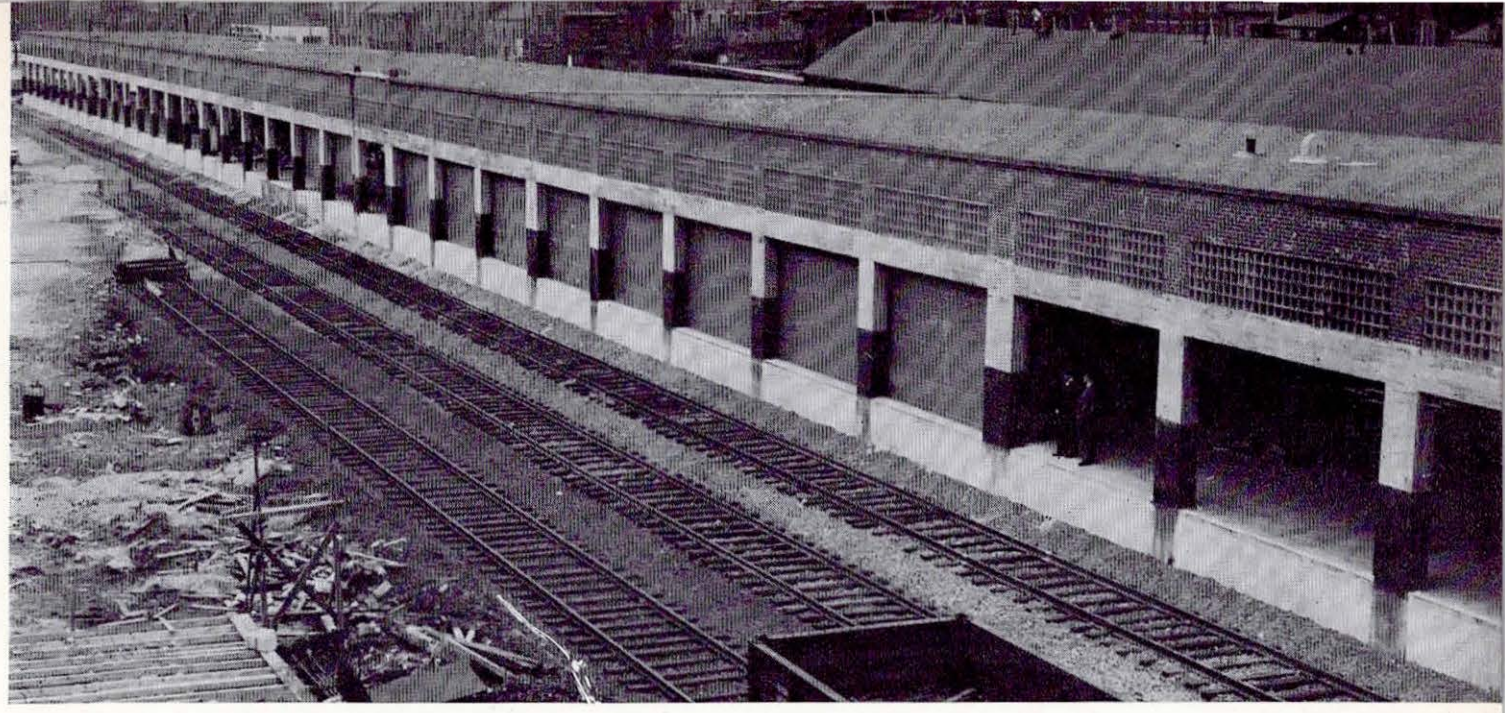
Trimmer engines at the opposite end of the classification tracks gather the groups of cars together, properly blocked for outbound trains, local cars, or cars for interchange, and move them to the departure yard. Here a man equipped with a "walkie talkie" moves along each string of cars, "talking" the car numbers direct to the yard office. Almost by the time this man reaches the end of the train the waybills have been relayed to the yardmaster's office at the departure yard where they are picked up by the conductor. In the meantime "ground air" compressed by stationary facilities, has been supplied throughout the train, the road engine has been attached—and the train is ready to "roll."

If at all possible the tracks in the departure and receiving yards of hump layouts are made long enough to obviate "doubling" of trains on more than one track. Standard equipment at such yards includes a floodlighting system that gives daylight visibility after dark, facilities for the prompt and efficient servicing of engines, and car repair tracks. With these appurtenances, and assuming an otherwise well-designed yard and a complete communication system for the prompt relay of instructions and changes to the various yard components and personnel, it is feasible for near-optimum handling to be accorded and terminal delays minimized. A factor in permitting higher switching speeds, in reducing loss and damage claims, and in minimizing maintenance costs, is a trend toward higher construction standards for yard tracks, including new rail and well-ballasted and drained roadbeds.

Smaller yards, industrial yards and interchanges are coming in for their share of attention in the railroads' efforts to put switching operations on a higher plane of efficiency. In particular evidence is a growing appreciation of the need for generally higher standards of track construction and maintenance at these locations to permit higher speeds and to reduce loss and damage. Just as inefficient major yards offset the benefits of good road handling, so do poor intermediate and subordinate facilities serve to negate the advantages of the modernized "hub" yards.

One Road's Experience

In practice, how do retarder yards result in advantages for the railroad and its shippers? An example is provided by the experience of the Union Pacific. This road has two new retarder yards, one at Pocatello, Idaho, completed late in 1947, and the other at North Platte, Neb., which was placed in operation in 1948. Before these yards were built cars in through trains originating or moving through gateways at Omaha and Kansas City from the east, and Denver, Los Angeles, Ogden, Butte, Portland, Seattle and Spokane from the west, were necessarily classified and switched into station order at initial and intermediate terminals. Since switching operations are now concentrated in the new



yards there has been a corresponding reduction in the amount of switching done at the initial, intermediate and destination terminals.

A train moving from the west coast to Council Bluffs, Iowa, may be used as an example to show how the retarder yards increase the efficiency so far as destination terminals are concerned. When the train reaches North Platte, the cars are classified along with cars from other trains, and when trains leave that point the cars are grouped for delivery to connecting carriers, and in many instances for industrial districts in specific cities. Thus the necessity is eliminated of switching the entire train on arrival in order to deliver the cars to each connecting carrier in one cut—the switch engine need only cut the cars off and deliver them.

While the railroad necessarily has additional switch engines working at the North Platte and Pocatello yards as compared with former practice, a material saving is being realized in the number of switch engines working at all initial, destination and intermediate terminals, since switching at those terminals has been reduced.

It is estimated on the Union Pacific that the substitution of gravity classification for switch engines results in switching time being cut in half. The construction of the two yards also has eliminated delays formerly occasioned when it was necessary to hold trains out of terminals while trains of prior arrival were being switched.

Railroad management must attain greater freedom in the use of equipment and manpower if the new and improved yard facilities are to yield maximum benefits. Strained interpretations of working rules and agreements have greatly reduced the flexibility of yard operations and slowed traffic.

In relatively few cases have agreements reached through negotiation between management and the brotherhoods been responsible for this stifling effect. It is more often the "liberal" interpretations of these agreements, chiefly by National Railroad Adjustment Board referees, which have created the wasteful procedures so apparent. Starting time rules, for example, generally provide a spread of 1½ hr. in the time during which regular yard assignments may be scheduled: 6:30 a.m. to 8 a.m.; 2:30 p.m. to 4 p.m.; and 10:30 p.m to midnight Transfer crews, which take trains from the departure yards much the same as road trains, were never—in the intent of the negotiators—included in the starting time rule provisions. The N.R.A.B., however, has ruled in a few cases, and thus set precedents affecting many, to the effect that these crews, too, must start within the identical intervals established for yard crews if they are used in any kind of work other than setting off or picking up solid blocks of interchange cars.

The impact has been severe, particularly at the larger terminals. It has meant further bunching of enginehouse work. It has added considerably to congestion during the three 1½-hr. periods in each 24 hr. Worse, it has made it mandatory to operate in consideration of the starting time of the crews rather than in consideration of service requirements. It has caused more congestion in the classification and departure yards, clogging tracks and delaying movements until the arbitrary starting hours. It has resulted in interchange times that are based on the working-rule book rather than the timetables of connecting lines, so that many interline deliveries take nearly 24 hr. more than they would if management were free to exercise its prerogative without suffering punitive payments for good judgment. Jurisdictional wrangles enter into the situation, too, and the N.R.A.B. referees have sided with union leaders in many cases in deciding how operations should be conducted on the railroads.

The means and "know how" to take the "bugs" out of yard and terminal operations are available. The basic problem is how to secure the capital to finance the contemplated improvements, and how to preserve the original, practicable intent of existing labor agreements in their ultimate application.

DEPENDABLE AND ECONOMICAL

Motive Power Performance Improving

Modern locomotives of all types help railroads individually and collectively in attaining better freight-train performance

While it is difficult to assess directly with any high degree of accuracy the role that good motive power plays in the attainment of good freight train performance, there are several sets of figures that form a partial basis for crediting the improvement in all types of locomotives with the continuing betterment of freight train operation. One such set of figures is the gross ton-miles per train-hour which, for 1948, increased 3 1/3 per cent over 1947, 22 per cent over 1939, and 62 per cent over 1929.

A second basis for comparing last year's freight train performance with past years is to examine three other sets of Interstate Commerce Commission figures, each in the light of the other two. This examination reveals that, while gross ton-miles decreased only 2.4 per cent in 1948 from 1947; train-miles decreased 5.1 per cent and road locomotive-miles decreased 5.7 per cent. In other words, locomotives pulled bigger trains last year than in 1947; they also moved at a higher average speed, 16.2 m.p.h. vs. 16.0 m.p.h. Locomotive-miles per train-mile decreased from 1.08 to 1.07, showing a reduction in double-heading and helper service. The task of moving the nation's freight was being accomplished with 5.2 per cent fewer active locomotives at the end of 1948 than at the beginning.

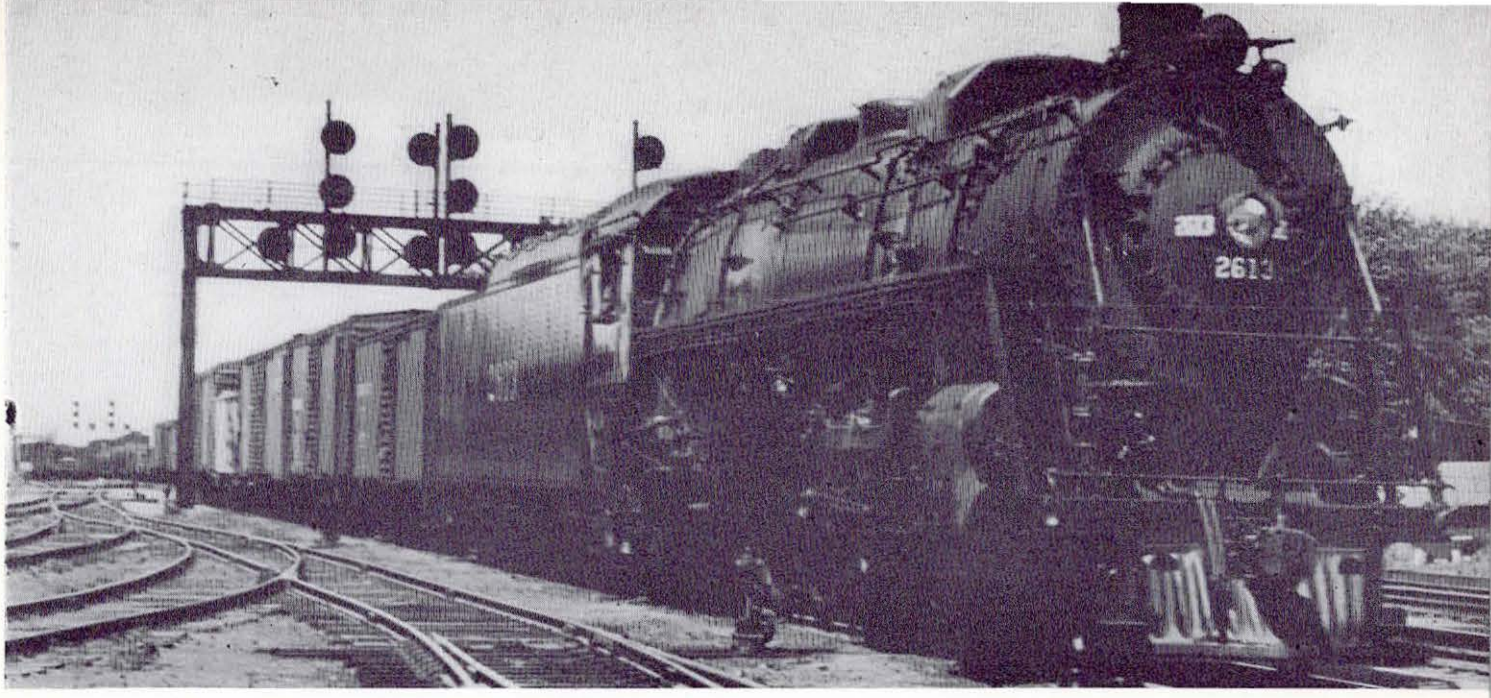
These improvements cannot be attributed entirely, or perhaps even primarily, to better motive power. The nature and volume of traffic must be such that favorable operating conditions exist for freight movement. But once favorable conditions do exist, the quality and adaptability of motive power play an important role in attaining good operating results, and in realizing the improvements previously mentioned.

Both steam and Diesel power share in the credit for the better overall operation of freight trains. Each type of locomotive, as well as electric power, has turned in excellent performances on individual lines. Road operation, either exclusively with steam, with Diesel-electric, or, as is often the case, with both types, has shown big improvement in gross ton-miles per train-hour over the past decade or so.

Diesel and Steam Operation

Table I is compiled from reports of the carriers to the I.C.C. It compares performance on 36 large U. S. railroads in 1948, when Diesel operation accounted for roughly one-fifth of the total gross ton-miles, with performance in 1940, when Diesel operation was negligible.

Five railroads increased their gross ton-miles per train-hour by more than one-third. The Gulf, Mobile



Illinois Central MS-1, powered by heavy modern 4-8-2's, is one of the two "overnighters" that serve cities more than 500 miles apart

& Ohio, which is 95 per cent Dieselized in freight service, had the largest percentage increase, 64.4 per cent. Second place went to the Delaware & Hudson, which had a 60.9 per cent gain with 2.83 per cent of its total gross ton-miles handled by Diesel power. The Burlington, which is the fifth highest railroad in the percentage of total gross ton-miles handled by Diesel locomotives, had the third largest percentage increase, 45.7. The Illinois Central handles all its freight trains with steam power and had the fourth largest improvement, 39.3 per cent. The Seaboard Air Line, nearly 58 per cent Dieselized on a g.t.m. basis, had a 34 per cent gain in gross ton-miles per train-hour, putting it in fifth place on a percentage increase basis.

Improvements by Districts

Considering each of the four districts as a whole, it is found that the Western district, with 26 per cent of the total gross ton-miles handled by Diesel locomotives, had the largest percentage increase in gross ton-miles per train-hour, 26.2 per cent. The Southern region, also 26 per cent Dieselized, had an increase of 23 per cent. The Pocahontas region, with less than one-tenth of one per cent of its total gross ton-mileage hauled by Diesels, had an increase of 8.3 per cent. The Eastern district was a little over 15 per cent Dieselized and showed an increase of 7.7 per cent.

The Pocahontas region led the other three in gross ton-miles per train-hour with an average of nearly 56,000. The Western district was second, with nearly 43,000 gross ton-miles per train-hour. The Eastern district average was 36,800, and the Southern region's a little over 33,000 g.t.m. per train-hour. The overall average for all four regions rose from 33,859 in 1940 to 39,782 in 1948.

Returning again to an interpretation of Table I, it can be seen that such correlation as exists between the degree of Dieselization and the percentage increase in a railroad's gross ton-miles per train-hour is most apparent in the Western district. What relationship does exist between the two sets of figures is most apparent in this district, although there are a number of exceptions. For example, the St. Louis-San Francisco with the fourth largest percentage increase in gross ton-miles per train-hour is Dieselized to a smaller extent than all but three of the twelve roads below it on the list. Similarly, the Denver & Rio Grande Western which is over 50 per cent Dieselized on a g.t.m. basis had about the same percentage increase as the Texas & New Orleans with 99.8 per cent steam operation.

The Southern region would show a fairly regular pattern between the degree of Dieselization and the percentage increase in gross ton-miles per train-hour except that the Illinois Central, with 100 per cent steam freight operation, has the second highest percentage increase in that region and is also second in gross ton-miles per train-hour handled. Figures for the Eastern district, which had the smallest percentage increase in g.t.m. per train-hour, form a better basis for a "statistician's nightmare" than for anything else. The Pocahontas region had an increase percentage-wise only slightly greater than the Eastern district. However, the operation of the roads in this region was already at a high level of efficiency in 1940. The Norfolk & Western's 1940 figure of 57,971 gross ton-miles per train-hour is exceeded in 1948 only by its own performance and by the Union Pacific's 58,282 gross ton-miles per train-hour.

Additional Factors

Unfortunately a listing such as Table I does not, and probably could not, take into consideration all the

Table 1—Improvement in Freight Train Performance on 36 Large U. S. Railroads and the Degree of Dieselization of Each

Railroad	Freight service Gross ton-miles per train-hour# 1940	1948	Per cent Increase	Per cent of total g.t.m. handled by Diesels in 1948
Eastern District:				
Delaware & Hudson	33,609	54,066	60.9	2.83
Reading	27,825	35,064	26.0	19.73
Boston & Maine	27,911	34,447	23.4	85.31
New York, Chicago & St. Louis	40,693	49,854	22.5	.05
Erie	46,709	54,848	17.4	39.14
Wabash	39,304	44,993	14.5	.04
Delaware, Lackawanna & Western	37,132	41,525	11.8	44.76
New York, New Haven & Hartford	28,818	32,174	11.6	65.22
Lehigh Valley	46,405	51,276	10.5	7.45
Baltimore & Ohio	30,519	32,734	7.3	10.70
New York Central	38,494	38,191	d .8	9.39
Pennsylvania	38,484	38,061	d1.1	8.44
Pocahontas Region:				
Norfolk & Western	57,971	62,939	8.6	....
Chesapeake & Ohio*	49,340	53,555	8.5	.07
Southern Region:				
Gulf, Mobile & Ohio†	33,466	55,014	64.4	94.95
Illinois Central	31,371	43,691	39.3	....
Seaboard Air Line	26,272	35,197	34.0	57.69
Southern	23,452	29,553	26.0	38.30
Atlantic Coast Line	23,835	27,744	16.4	31.57
Louisville & Nashville	28,247	28,793	1.9	.12
Western District:				
Chicago, Burlington & Quincy	30,044	48,132	45.7	47.84
St. Louis Southwestern Lines	34,013	45,199	32.9	32.33
Union Pacific	44,094	58,282	32.2	21.33
St. Louis-San Francisco	27,850	36,236	30.1	14.90
Atchison, Topeka & Santa Fe	37,872	49,005	29.3	33.03
Missouri Pacific	33,650	43,226	28.5	27.10
Chicago, Rock Island & Pacific	30,022	38,509	28.3	26.03
Missouri-Kansas-Texas Lines	30,474	38,901	27.7	31.46
Northern Pacific	35,116	43,742	24.6	24.57
Denver & Rio Grande Western	30,826	38,057	23.5	50.99
Texas & New Orleans	29,547	36,417	23.3	.16
Southern Pacific	38,037	44,978	18.2	13.17
Great Northern	38,663	44,392	14.8	30.18
Chicago & North Western	30,165	33,796	12.0	24.58
Chicago, Milwaukee, St. P. & Pac.	31,567	34,514	9.3	18.12
Texas & Pacific	39,306	42,402	7.9	1.55

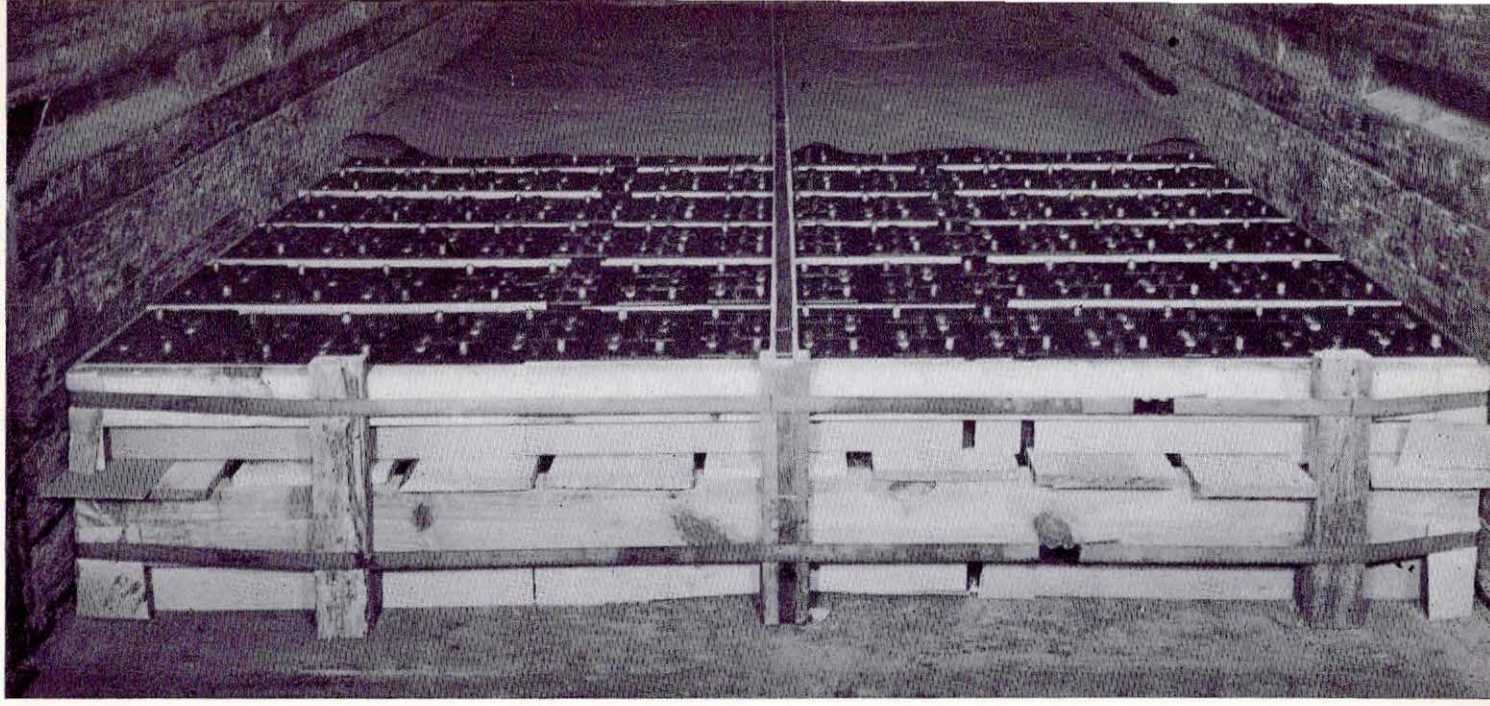
* Includes Pere Marquette merged in 1947
† Includes the Alton merged in 1947
# Based on gross ton-miles of cars, contents and cabooses
d Decrease

factors involved in comparing the effectiveness of today's freight motive power with that of 1940. There would be a vast difference, for example, in the percentage increase in gross ton-miles per train-hour that should be expected from a road that was well equipped in 1940 with modern 2-8-4 or 4-8-4 steam locomotives, as compared to a second road which had to rely on light and ancient 2-8-2's in that same year. A small percentage increase in the case of the first road would be equally as meritorious as an increase several times as large on the second road.

One benefit from Diesel freight operation which is particularly advantageous in territories having severe grades, but which does not show in the table, is reduction of double heading. The constant-horsepower characteristic of the Diesel locomotive, with the resulting high tractive force at starting and low speeds, reduces the need for helper locomotives in hilly terrain where momentum grades cannot be run. Thus to a railroad with long heavy grades a principal advantage of Diesel power may be a reduction in helper service on up-grades and the benefits of dynamic braking on down-grades. The g.t.m. per train-hour would not necessarily be affected by either of these auxiliary benefits of Diesel power.

Prospects for the Future

Continuing improvement in the three principal types of motive power presently available, plus the possibilities of the gas turbine, promise constantly better means of pulling the nation's freight trains. Even if the average age of locomotives remains materially unchanged, the improvement of existing types and the introduction of new forms of motive power will provide the railroads with ever-better tools to furnish shippers with fast and dependable transportation of their goods. Just as the Diesel locomotive has improved overall freight train performance over the past few years, so too should it continue this trend in both the near and distant future. Steam performance likewise should continue its progress where vastly improved modern units take over work now being done with locomotives of early-1900 vintage.



DAMAGE PREVENTION FORCES GET RESULTS

Proportion of claims filed was 22 per cent less in '48 than in '47 — Cost of packaging and loading frequently cut — Cases show shipper cooperation makes savings possible for all

The fact that only two carriers are mentioned in this article does not mean they are the only carriers with active loss and damage prevention organizations. Neither does it mean that they are, necessarily, the best in the field. Practically all the railroads have effective loss and damage prevention forces, as has the Association of American of American Railroads. It appeared, however, that their methods and goals could be pointed up best by specific experiences of one or two carriers.— Editor

In their efforts to cut the number of claims filed against them for loss and damage to freight, the American railroads have had considerable success during 1948 and so far this year. Although the dollar volume of claims paid in 1948 was above that of 1947, this is not the whole picture by any means, for there is a really bright spot in the claims situation for 1948, namely, the decrease of 17.6 per cent in the number of claims filed against the railroads when carloadings were down only about 4 per cent. Or, to put it another way, for every 7.2 cars loaded in 1947 shippers filed one claim, while in 1948 the ratio was one claim for every 9.1 cars loaded. This shows an increase in safe, damage-free, transportation of about 22 per cent.

The railroads attribute a great part of this claim reduction to the work their loss and damage prevention organizations have done, with the fruitful cooperation of both shippers and receivers of freight. These claim prevention men not only call on shippers, seeking to help and be helped, but take part in the instruction of railroad forces in car loading and stowing, switching, and in the selection of the proper car in which the shipper's products should be loaded. But above all, as the accompanying table indicates, most of their time is spent in advising with the shipper in matters of loading, packaging and handling his freight. A look at the activities of some of the New York Central's loss and damage prevention personnel will show how effective these measures have been in specific instances.

Porcelain Enamel Ware

One case is that of a large manufacturer of stoves, who was shipping a very high grade product into several highly competitive markets, with many of the stoves arriving in an unsalable condition. New York Central Special Representative A. R. Schroeder was

WAR FREIGHT MOVED BY TRAIN —

"Your Money

President Gurley of the Santa Fe told the press the other day that, while he used to think that the federal government was an "it," now he is quite sure it is a "they"—because its respective parts work at cross-purposes, to the utter bafflement of an industry like the railroads. He was talking about regulation, but his remarks have equal application to the current war-time reparations proceedings, in the outcome of which the shippers have so great an interest.

All during the war, the Navy and the Army worked closely with the railroads on rate matters under a procedure which was suggested by the late Joseph B. Eastman and designed to save everyone's time. At the specific request of the railroads, this procedure was submitted to and approved by Thurman Arnold, then assistant attorney general. Mr. Arnold could hardly qualify as a biased hireling of the railroads, and Mr. Eastman never looked kindly on "gouging." At no time after the procedure was set up in 1942 did any of the armed forces complain about its effectiveness or fairness. All of the services gave generous praise, in writing, in public, to the railroads for their great war job. The present ranking officers in the office of the Army dealing with domestic rates and traffic were engaged in entirely separate activities during the war, when the rate negotiating procedures under attack were made, yet, after more than three years' opportunity in which to review them, they have not indicated that they find fault with them.

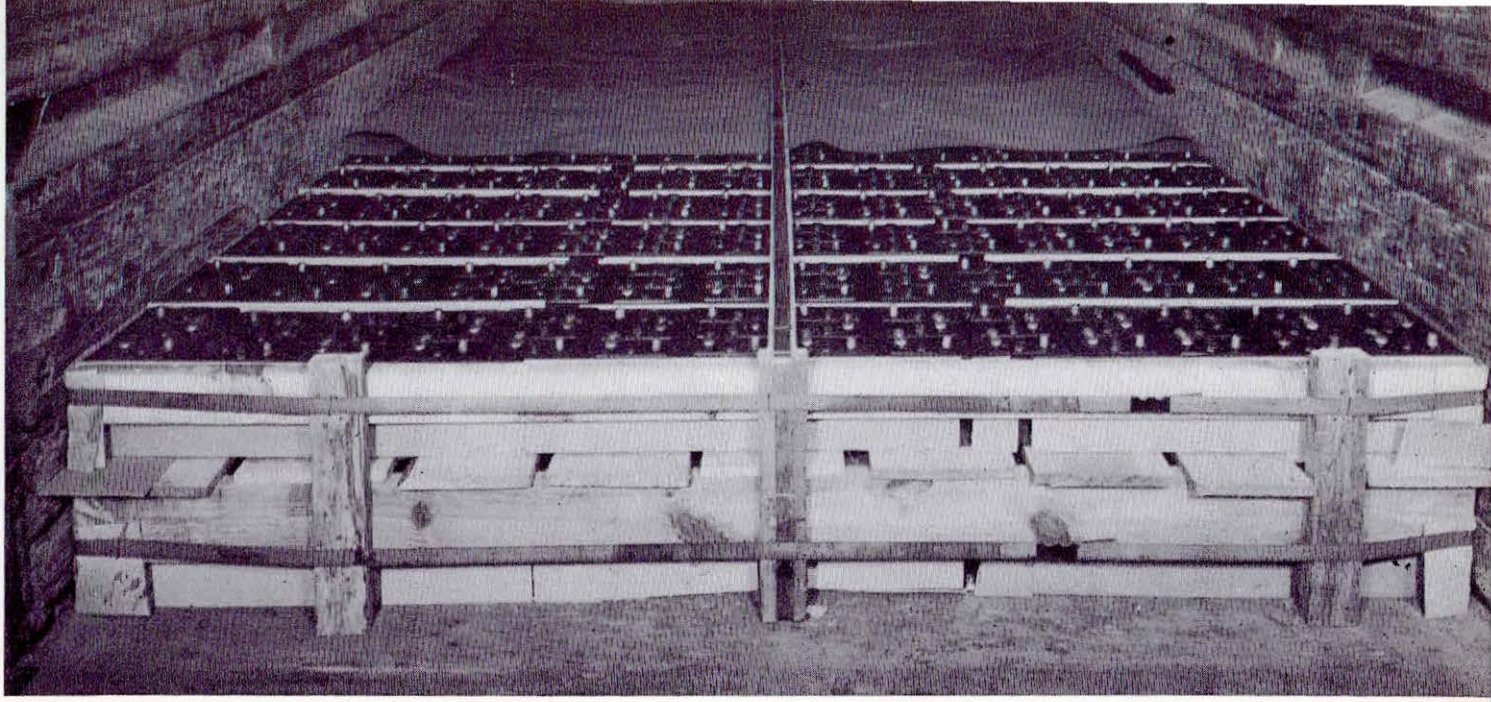
So it seems that the Anti-trust division of the Department of Justice is up to its old shadow-boxing game of making complaints on behalf of people who aren't complaining. It is apparent that the reparations complaints were filed only after the Department of Justice bedeviled the Army into allowing its Anti-trust division to pick the bones of the Army's wartime freight rate performance, in the hope of assembling a "horrible skeleton" that would frighten all good men into believing that only the Department of Justice can protect the taxpayer from the iniquitous businessman.

On the basis of what the division claims constitutes a repayable excess, the railroads would have to hand over between $2 and $3 billion in cool cash. The lower limit alone of the possible reparations payment is at least three times the roads' net working capital and 186 per cent greater than the total net income of the Class I carriers in 1948.

It is clear that if, by some tragic twist of fate, the Department of Justice gets to collect these billions, the commercial shippers of the country are going to be the chief victims. Either their rates are going up; or the services rendered are going down; or they will, in the future, hand over their shipping orders to a civil service clerk in a government-owned freight station.

The D. of J.'s allegations are completely ridiculous. On first reading them, *Railway Age* felt the railroads ought to ignore them and laugh the D. of J. out of court. But the record of government cases against its citizens indicates that Blind Justice does a lot of peeking when Uncle Sam is one of the litigants. The railroads are undoubtedly acting wisely in putting their best talent on the reparations cases and spending a great deal of money getting together the complicated evidence needed to refute so broad-based a set of charges. They owe it to their owners and the shipping public. If they are beaten, it shall not be the result either of a bad record or lack of effort.

The case of the D. of J. is based, for the most part, upon two fictions: (1) that the government ought to have paid even lower rates than it did because it shipped in volume; and (2) that it could easily have obtained *super*-bargains if a conspiracy between the



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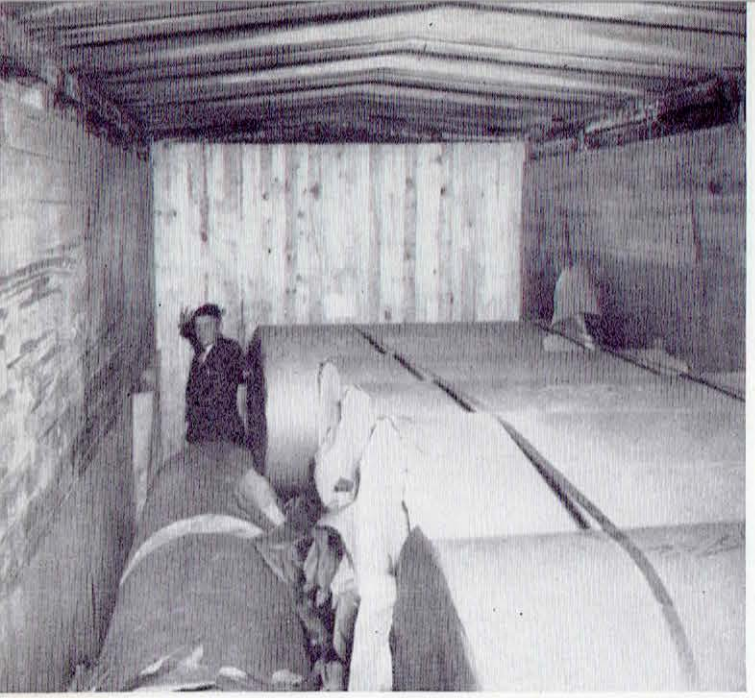


Left—Rough handling resulted here in the load shifting 40 in. from the end of the car. Right (facing page)—A case for claim prevention

Fig. 1—Before: A large Mid-western paper manufacturer was loading his product as indicated in the drawing, and heavy damage was resulting. Blocking was nailed between each roll placed transversely on the floor of the car, and in front of the main mass of the load near the doorway

Fig. 2—After: New York Central claims prevention personnel suggested this method of blocking between rolls and not nailed

Fig. 3—One strap was eliminated, as was the blocking near doorway. The frame on top was added. This stopped side shifting of rolls in the top layer and reduced the damage occurring when rolls shifted to the side and banged into opposite wal. Damage resulting from rolls riding over blocking and tearing when cars were handled roughly was effectively reduced by this application of the floating load principle

called in on the case and found a shipper who was willing to do anything in reason to stop the damage. A new method of bracing the stoves in the car was tried and found only partially effective. Laboratory tests on a vibrator and a Conbur incline tester followed and it was observed that most of the damage occurring was enamel chipping from the end plates. The most severe impacts revealed that while they sometimes caused bulging of the plates there was no chipping of the enamel. When the stoves were turned end for end and put through their paces chipping resulted, indicating that in transit reverse impacts were driving the bulges back to their original position or beyond and that the chipping occurred then.

These findings led to redesigning the crate as suggested by Mr. Schroeder. Base members were relocated and thickened to give greater strength as well as better support for the bolts which tied the stove to the crate during shipment. An additional diagonal was added to the base, while the top was completely redesigned to give greater strength and rigidity. Side panel changes included a cut in the thickness of the diagonals to allow greater clearance to the stove, and the addition of one set of diagonals in each panel. Sponge rubber was added at places where stove angles and crate made contact. (With these changes the additional cost of the crate was only about five cents.)

Following these changes in design, crated stoves again were run through tests on a Conbur tester. The results showed the crate to be satisfactory for withstanding coupling speeds up to 8 or 9 m.p.h., and now very little damage is being experienced by the shipper, and in these few cases extreme rough handling generally is the cause.

Contacts Made by New York Central Loss and Damage Prevention Forces

	1948	1947
1. Individual shippers, loading and container problems	2,741	2,287
2. L.C.L.-Stations, inspections, etc.	917	914
3. Divisional subcommittee meetings, at yards, educational meetings	658	567
4. Miscellaneous assignments	672	731
5. Total	4,988	4,499

Increase of 489 contacts, or 10.9 per cent, over 1947
Increase of shipper contacts, 454, or 19.8 per cent

Damage to Auto Engines Stopped

Just last month, the Rossford Ordnance Depot was receiving in bad order automobile engines shipped from the Kennelly & Sisman Co. warehouse in Detroit, Mich. The shipper called in a N.Y.C. claims prevention man who cleared up the trouble in one visit. His suggestion included a rearrangement of the load as placed in the car, which made it possible to ship six more engines per car, cut the cost of blocking and bracing from $60 per car to $5.50 per car, and above all, stopped the damage. In this case, the loading plan, whereby six additional engines were added to the lading, took up the slack space in the car that hitherto had allowed the load to shift in spite of the $60 worth of blocking and bracing. The only bracing necessary after these changes is a double-faced "X" across each doorway to protect the lading in that area.

The Railway Express Agency is another carrier whose loss and damage prevention forces have been very successful in cutting claims. In 1947, shippers filed 5.46 claims for every thousand shipments made by R.E.A. In 1948, this ratio decreased to 4.72 (i.e. by 13.6 per cent) and in the first two months of this year the Express Agency had further reduced the ratio of claims per thousand shipments to 4.31. Thus in 14 months R.E.A., with the cooperation of its patrons, has been able to effect a 21.1 per cent increase in safe transportation of freight. Railway Express claims prevention forces are given much of the credit for this improvement. In 1948, the 111-man field staff made 21,245 calls on shippers and receivers in its effort to minimize the waste from loss and damage.

One of these calls was made at the request of the

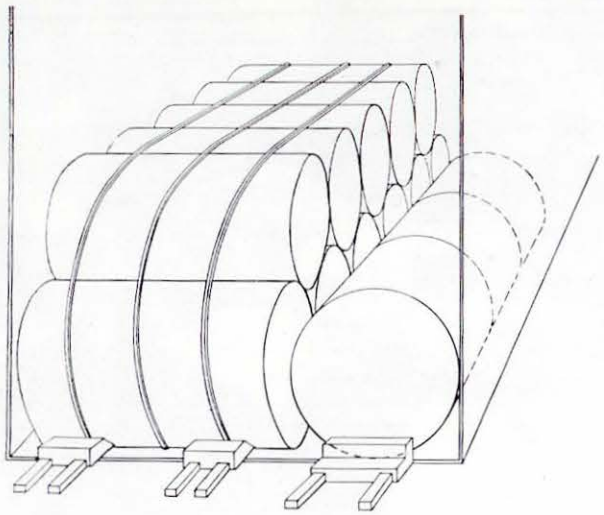


Fig. 1

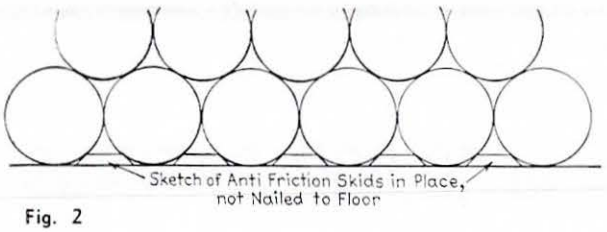


Fig. 2

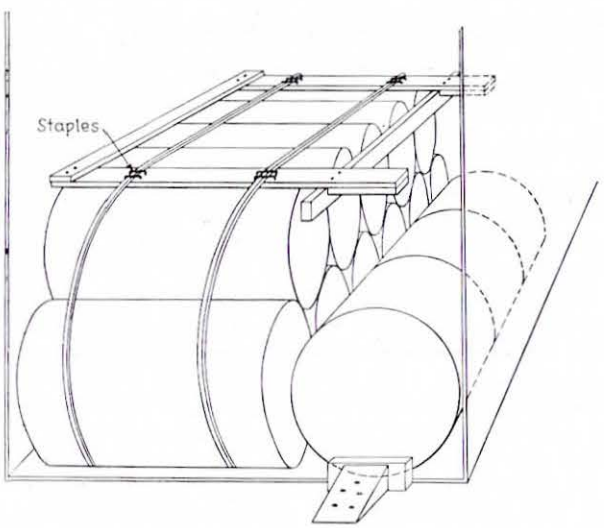


Fig. 3

shipper, the Marvin Ellis Company of New York, a maker of heavy cardboard displays in the form of merry-go-rounds mounted on an electric motor. An R.E.A. loss and damage prevention man found in use a corrugated carton in which there was one inch clearance between side walls and the contents. No inner cushioning material was used. He prepared a sample package in which a generous supply of shredded paper was placed on the bottom of the carton and also over the top of the article. The box then was closed with gummed paper tape. In a test, this sample was

thrown, end-over-end, down 14 steps twice and then dropped a distance of 4 ft. to the floor. When the carton was opened the contents were found in perfect condition. Since this pack was adopted by the shipper several months ago there has been no damage of any sort.

Damage to lamp shades, long one of the top claim producers, was the reason a Railway Express representative called on the Noti Novelty Company of Rockville Centre, N. Y. An examination of the regular shipping container revealed that no cushioning material was placed on top, bottom or sides. Also, shades were nested tightly, with no protection between them. Cushioning material, plus separators between shades, effectively stopped the damage in transit, and since this packaging method was adopted only two minor claims have been filed.

Glass Damage Reduced, Too

Another manufacturer of lamps, lamp shades and fixtures, the Lightolier Company of Jersey City, N. J., was having trouble getting shipments of a large bowl-like globe through to consignees in good shape. Again, the packaging did not provide sufficient cushioning against shock. A carton was recommended which has cut damage on this item almost completely. Double-faced corrugated board was placed in the carton, standing two inches from the bottom, with the center of the board cut out. The globe was set in that opening and protected by two excelsior pads, one placed between one rim of the globe and the bottom of the package while the other was set in so that it guarded the other lip of the fixture. Then a solid double-faced corrugated board, cut and bent to hold the globe firmly in the pack, was placed over the excelsior-protected article. Crushed paper was added to fill the carton to the top, except for the space occupied by another small fixture which was protected by a collar. The whole was sealed with gummed paper tape.

Giving the Works to 10,000 RATINGS

Uniform classification regional hearings ended; shippers getting socialistic scheme they didn't ask for

The railroads' Uniform Classification Committee, at the end of April, finished up its job of holding regional hearings in connection with the formation of a single set of classification ratings for the whole country. If one were to be limited to a single comment about the hearings it would be that, if the shipping public was apathetic about this development when the Interstate Commerce Commission was conducting its general investigation of class rates and classifications, it is far from being so now.

The committee (consisting of the chairman of each of the three territorial classification committees) and its staff, under instructions of railroad management, have been working full- and over-time since the commission's order was issued in May, 1945 (No. 28300, Class Rate Investigation, 1939, and No. 28310, Consolidated Freight Classification), in the effort to carry out the mandate set forth in its Part I. It would appear that some of the shippers who met with the committee don't like at all what the railroads propose doing. But the committee is merely carrying out the commission's order.

Let us take, as a hypothetical example, the plight of a small manufacturer of a household appliance whose plant is in the Northeast. Because he's small and because he is in Official territory, he ships on class rates according to ratings in the Official classification. It is probable that his competitor in the Southeast, on the other hand, has the advantage of an exception rating. Then along came the I.C.C. decision—originally to be made effective January 1, 1946, but enjoined by court action so that it was actually effective after the Ex Parte 162 increases—making class rates in Official territory a flat 10 per cent higher, and elsewhere, 10 per cent lower. The avowed purpose of this rate adjustment was to make the class rates in the three territories more nearly uniform.

But already, and continuing in the course of the next two years, the railroads, for revenue considerations, were forced to ask for a series of general rate increases. In response thereto, the I.C.C. ordered varying percentage increases in the three territories, with the highest in the East, so that, as of now, the shipper in the Eastern district has had an average increase of 55.6 per cent in the general rate level since June 30, 1946, compared with 52.6 per cent in the Southeast and 47.6 per cent in the West.

Now comes the uniform classification. When unlike classifications are being merged into one, some people are bound to be hurt. This is especially true when it is considered that territorial classification ratings were devised in part in relation to the class rates to which they would be applied. Where rates were relatively lower, there was a tendency to make the ratings relatively higher, and the reverse. So, to carry out the commission's order to use the Official classification as

PARASOLS AND LAMPSHADES, TOO

Railroads must quote rates on any quantity of any commodity between any stations

a general basis in its merger of the ratings, the Uniform Classification Committee may have to lower the relative rating assigned to the household appliance in question in the South, but leave it the same in the East.

But there is more in store for Mr. Eastern Manufacturer. The commission's decision provides that, once the uniform classification is ready for application, there will go into effect, simultaneously therewith, a permanent scale of class rates for *uniform* application in all parts of the country east of the Rockies. This scale of class rates is set forth in a small, unimportant-looking tabulation occupying but a third of a page at the end of the printed report in 262 I.C.C. Identified as Appendix 10, this scale will ultimately rule all class rates. Its effect, in general, is to raise class rates in Official territory at least 10 per cent and up to 15 per cent, and to reduce them generally elsewhere. The permanent adjustment will, therefore, be just as bad for the eastern manufacturer as the interim boost, if not worse.

The eastern manufacturer tells the railroads that these combined influences are running him out of business. And the only answer anybody can give him is that that is just what was intended; he is being "relocated." The railroads didn't ask for it; almost no responsible association of substantial shippers sought it. Somebody, back in the Thirties, needed a political issue and the Southern Governors Conference, aided by the T. V. A. and other social experimenters, whooped up the freight rate "barrier" struggle. In response to their pressure Congress put some amended language in the Transportation Act of 1940, section 3(1) which, coupled with section 5(b) of the act, constituted what the majority of the I.C.C. held to be a mandate for uniform class rates, and, *ipso facto*, uniform classification.

The commission pointed out in its report that there was presented no evidence that the industrial development of the South or West had been retarded by the alleged discrimination in rates; the record showed, on the contrary, that the Southeast and Southwest were growing industrially, while the East was declining or standing still. A large body of shippers in the South told the commission that the existing rate structure was not unfair to them and was suited to the traffic of the South. No single railroad assisted the introduction of territorial class rates into the political or regulatory arena. Almost all of them vehemently opposed the activities of the Southern Governors' coterie. After the commission's decision, the western roads took the issue to the Supreme Court, though unsuccessfully.

Yet, although they are in no way responsible for the development, the railroads and shippers must find a way to live with the incubus thrust upon them by politics. Those shippers who will be adversely affected by the merger of ratings or class rate adjustment are not confined to Official territory. Interterritorial class rates are seriously disturbed by both orders. Furthermore, there is considerable confusion about the status of exceptions to the classification. Exceptions are more important in the West and South than the East; in the South they are also of great influence in moving l.c.l.

In its decision, the I.C.C. majority told the railroads that "it will be necessary to examine the various exceptions upon their merits and, as far as possible, to weave them into the going classification. Only when this is done can any classification be said to be fair, just and reasonable." By subsequent pronouncements, it is understood, the commission has expressed the opinion that exceptions having a wide application over a territory ought to be incorporated into the classification.

There is nothing inherently wrong with the idea of a uniform classification. The I.C.C. has urged it ever since it was established in 1887. The danger in the No. 28310 decision is that it is linked with a scheme to change rates wholesale, chiefly for the purpose of carrying out a social experiment.

WAR FREIGHT MOVED BY TRAIN —

"Your Money

President Gurley of the Santa Fe told the press the other day that, while he used to think that the federal government was an "it," now he is quite sure it is a "they"—because its respective parts work at cross-purposes, to the utter bafflement of an industry like the railroads. He was talking about regulation, but his remarks have equal application to the current war-time reparations proceedings, in the outcome of which the shippers have so great an interest.

All during the war, the Navy and the Army worked closely with the railroads on rate matters under a procedure which was suggested by the late Joseph B. Eastman and designed to save everyone's time. At the specific request of the railroads, this procedure was submitted to and approved by Thurman Arnold, then assistant attorney general. Mr. Arnold could hardly qualify as a biased hireling of the railroads, and Mr. Eastman never looked kindly on "gouging." At no time after the procedure was set up in 1942 did any of the armed forces complain about its effectiveness or fairness. All of the services gave generous praise, in writing, in public, to the railroads for their great war job. The present ranking officers in the office of the Army dealing with domestic rates and traffic were engaged in entirely separate activities during the war, when the rate negotiating procedures under attack were made, yet, after more than three years' opportunity in which to review them, they have not indicated that they find fault with them.

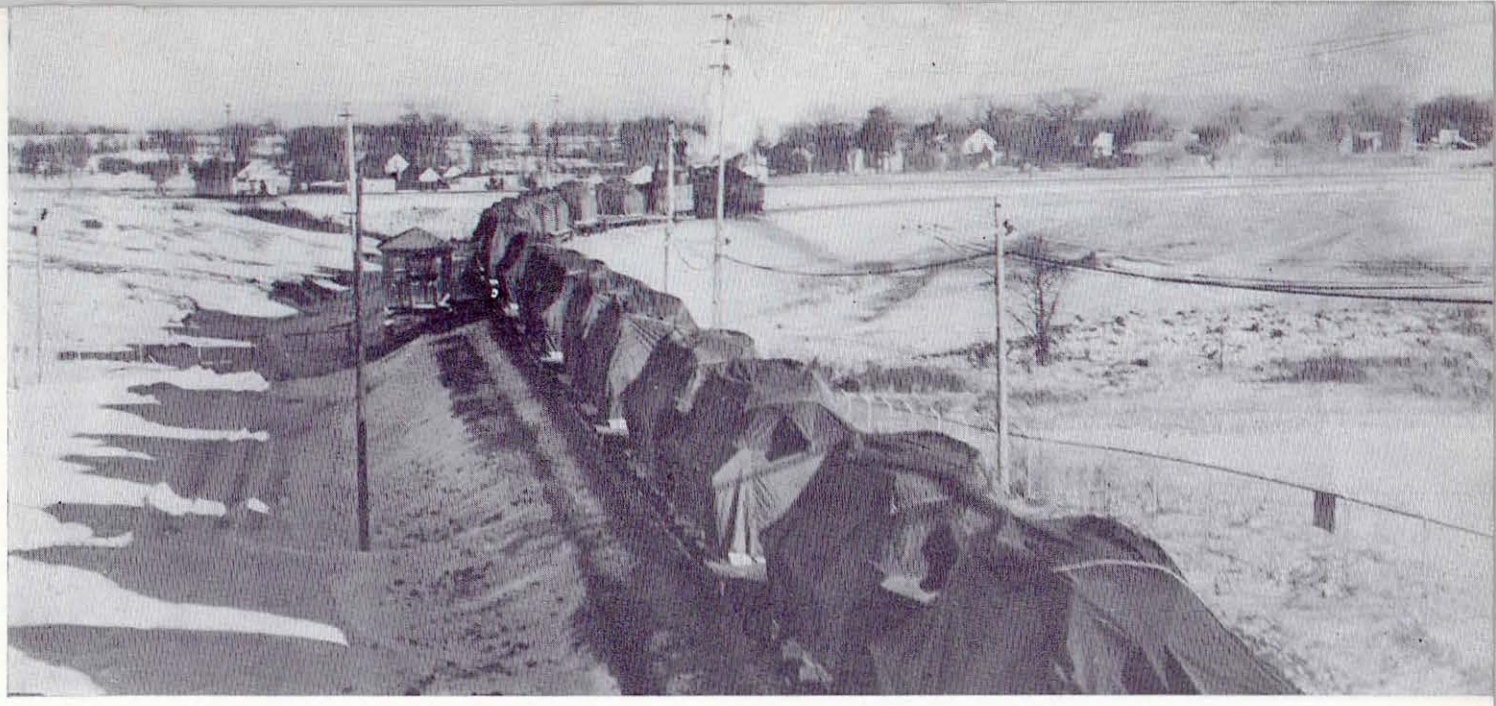
So it seems that the Anti-trust division of the Department of Justice is up to its old shadow-boxing game of making complaints on behalf of people who aren't complaining. It is apparent that the reparations complaints were filed only after the Department of Justice bedeviled the Army into allowing its Anti-trust division to pick the bones of the Army's wartime freight rate performance, in the hope of assembling a "horrible skeleton" that would frighten all good men into believing that only the Department of Justice can protect the taxpayer from the iniquitous businessman.

On the basis of what the division claims constitutes a repayable excess, the railroads would have to hand over between $2 and $3 billion in cool cash. The lower limit alone of the possible reparations payment is at least three times the roads' net working capital and 186 per cent greater than the total net income of the Class I carriers in 1948.

It is clear that if, by some tragic twist of fate, the Department of Justice gets to collect these billions, the commercial shippers of the country are going to be the chief victims. Either their rates are going up; or the services rendered are going down; or they will, in the future, hand over their shipping orders to a civil service clerk in a government-owned freight station.

The D. of J.'s allegations are completely ridiculous. On first reading them, *Railway Age* felt the railroads ought to ignore them and laugh the D. of J. out of court. But the record of government cases against its citizens indicates that Blind Justice does a lot of peeking when Uncle Sam is one of the litigants. The railroads are undoubtedly acting wisely in putting their best talent on the reparations cases and spending a great deal of money getting together the complicated evidence needed to refute so broad-based a set of charges. They owe it to their owners and the shipping public. If they are beaten, it shall not be the result either of a bad record or lack of effort.

The case of the D. of J. is based, for the most part, upon two fictions: (1) that the government ought to have paid even lower rates than it did because it shipped in volume; and (2) that it could easily have obtained *super*-bargains if a conspiracy between the



— AT SPECIAL RATES

AND Your Life" — Uncle Sam

Between $2 and $3 billion in reparations sought by Justice Department on ridiculous grounds

railroads and their "stooges" in the military forces had not prevented.

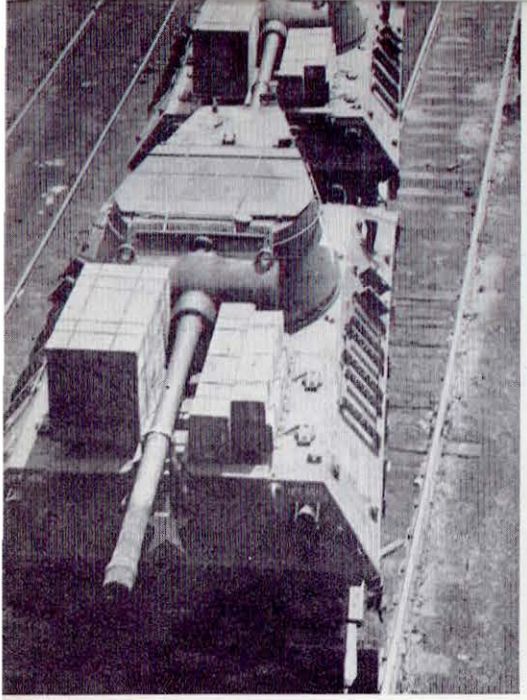
The first charge is easily disposed of. The government did, of course, obtain bargain rates in most instances anyway. That of its traffic which moved in the West and certain portions of Florida and Michigan was accorded half-rates in "land-grant territory"—not only on land-grant routes but on most of the paralleling lines which, had they not "equalized," would have been shut out from government traffic, except where extreme congestion of land-grant routes existed. In addition to this, most government freight traffic moving in substantial volume was accorded special rates, granted only to the government, under section 22 of the Interstate Commerce Act. In some instances section 22 agreements were used to extend transit privileges to types of shipments and at points where they were not ordinarily applicable.

Government traffic was heavy in the aggregate, but by no means did the majority of it move in shipment volume of a character to warrant rate concessions beyond those already granted. Much of it was "balloon" freight, light-loaded and awkward. Government l.c.l. was notoriously expensive to handle on transfer platforms. Expensive special service was required and generously given by the railroads to a very large volume of "emergency shipments" destined to the ports on "short time" for convoy loading, for only a portion of which the Army allowed special train minima. In handling of explosives the railroads incurred high protection costs and undertook financial risks which, in the event of accident, may well have bankrupted individual carriers. In no instance did a pound of government traffic move at a rate in excess of that which would have been charged had it been moved in ordinary commercial channels.

Wartime procurement policies enriched building contractors, gave aircraft builders a fantastic rate of return, and created "empires" for New Dealish industrialists. It is, therefore, ironical that the railroads—whose general rate level was the same when the war ended as when it began, whose average revenue per ton-mile actually *decreased* during the war years, who accorded the government lower rates than any other of their customers, and whose net return on net investment during the period averaged only 4.9 per cent—should be the *chief target for the postwar inquest on who-got-rich-from-the-war. Cinderella, sitting in the ashes, is indicted for Plutocratic excesses.*

Conspiracy's an Ugly Word

The second fiction in the D. of J.'s case is the contention that Army and Navy officers—some of whom used to work for the railroads—in default of their duty, entered into rate and rating agreements with the railroads which defrauded the government. As an aside, it might be pointed out that it would be very difficult to find an expert in railroad rates who has not worked for a railroad at some time. Most of the older of the country's industrial traffic managers—and even Interstate Commerce Commission rate experts—once



PRECISION TRANSPORTATION

worked for railroads; yet they could hardly be accused, on that account, of betraying their present employers. Indeed they appear to use the experience of their earlier years to very good advantage in their behalf.

Precisely the same is true of the handful of former railroad rate men who, only after the strongest appeals or direct military orders by the services, aided the Army and Navy transportation chiefs in Washington during the war. There is, of course, no "right" or "wrong" in freight rate matters; hence charges of their misfeasance in office are more easily made than refuted.

The classification of numerous newly developed implements of war, which had never before moved in commerce, was a most difficult undertaking; in many instances the negotiating officers were kept from knowledge of the full description of articles by war-imposed secrecy.

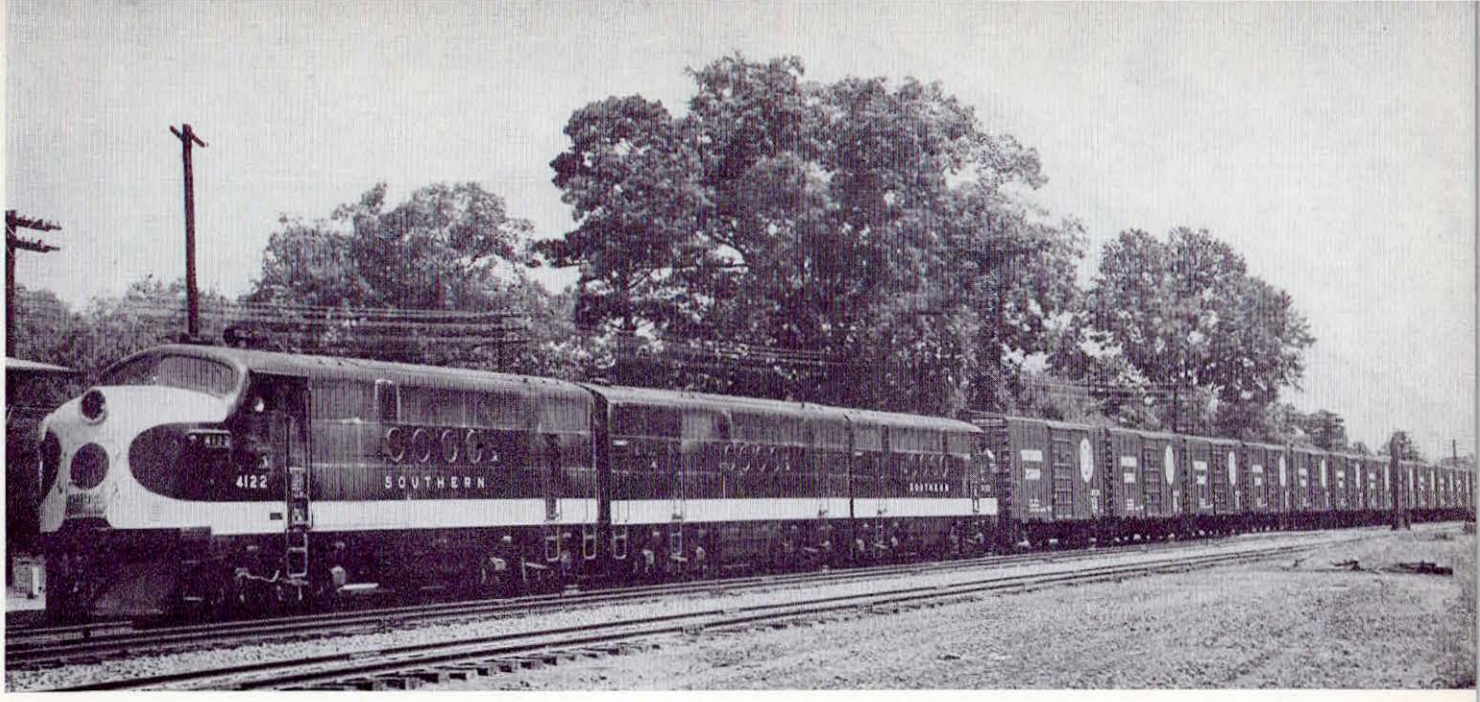
Yet those officers — now accused of jobbery — fought hard, often with limited evidence, to have war material transported at rates lower than corresponding commercial traffic. They won, for example, their point that armor plates and shapes, in carloads, less than three inches in thickness, should move at the corresponding carload rates for commercial steel, and obtained additional reductions in rates theretofore in effect on armor plates and shapes three inches and more in thickness. (See I.C.C. Docket 29067 and related cases, 263 I.C.C. 457.) They won reduced rates on cartridge-case cups and bullet-jacket cups. (I.C.C. Docket 29093, 262 I.C.C. 418). Both of the cases were decided in 1945, and the reduced rates resulting therefrom have been of benefit to the armed services (and any other shippers) since that time.

It is common knowledge that, in addition to formal cases won before the Interstate Commerce Commission, these officers obtained through negotiation with the railroads, many changes in tariff rates (for examples, see the entries in the Consolidated Freight Classification on many classes of war supplies), and obtained many important reductions in rates by quotations authorizing the application of less-than-tariff rates in conformity with section 22. These accomplishments were carried through without name-calling or abuse and under the handicaps that are always present in the pressure of wartime operations. And they resulted in immediate financial savings.

Last year one of the D. of J.'s spokesmen attempted to link the railroads with Air Force General (Benny) Meyers, now in jail because of wartime graft, in a scheme to gouge the government. By so doing, that witness unwittingly absolved from all taint of conspiracy the former railroaders in the Army's Transportation Corps' rate headquarters because the fact is that the latter tried, during most of the war, to have the rate and routing activities of the Army—including the Army Air Force—centralized for efficiency, and opposed General Meyers' separate administration of those activities in Air Force procurement. How is it possible that both they and General Meyers conspired with the railroads for the same object at the same time?

The shippers of the country need have no doubt of the nature of the reparations proceedings. They are being pursued by professional left-wingers who see in it a quick and easy way toward government seizure of the railroads, and, later, socialization of other enterprises. The government agency bringing the charges has a consistent record of railroad persecution on a wide front. It has never before shown any disposition to befriend the taxpayer.

When Division 4 of the Interstate Commerce Commission begins hearings on the first group of the 17 reparations petitions of the D. of J., the voice of the shippers will be heard. It may be physiologically impossible, but it is hoped they will make the faces and ears of the D. of J. to blush.



THE NEW APPROACH TO SELLING

Relationship to service and rates brings changed concepts of attitude, training and customer relations

The sale of railroad freight transportation is in process of complete transformation. The men who used to call themselves, in jest, the "Amalgamated Guild of Doorbell Ringers," are transforming themselves into something as different from the traditional railroad solicitor as Mr. Luckman of Lever Brothers is from the old-fashioned drummer "working the bushes" for a hardware jobber.

New Times, New Methods

This is not to say that their predecessors were cigar passers. In the ranks of traffic solicitors now gone were men of outstanding conception, imagination and initiative who had a broad understanding of their obligations and objectives, and whose visits were valued by shippers. But some of their techniques, though admirably suited to their times, are now outmoded.

The principal characteristics of the old-time freight solicitor—which are being preserved intact in the present generation of traffic salesmen—are (1) his persistence, (2) his imagination, and (3) his vocabulary. The last was, and is, particularly important, because most industrial traffic managers were once in the transportation business themselves and appreciate having men call who "speak my language." It would be unfortunate if, in the effort to modernize the training of their men, the railroads were to subordinate unduly transportation experience and "atmosphere" to abstract selling procedures.

"Let Me Do Something for You"

The modern railroad freight salesman learned an important lesson during the war, when a sellers' market in transportation existed. Anxious to keep contact with his customers—when he wasn't riding troop trains—he used his visits to suggest routings to avoid congestion, explore the best package car routes and schedules, help his clients get passenger space, alleviate the shortage of cars and perform many other services. He found that a salesman gets a better reception when he takes the attitude, "Is there anything I can do for *you?*", than when he asks "Have you any business for *me?*", or complains, "My road hasn't been getting a fair share of your business."

Now that there is a buyers' market again, he finds that the positive frame of mind pays off more than ever before. True, the salesman's ultimate aim is to get business. But that goal is better accomplished by the "help" than by the "gimme" approach.

The services a top-notch modern railroad salesman can render his customers are manifold. He knows the best package car times and routes, on foreign lines as well as his own road, and sells the best railroad l.c.l. service available. He may not be a rate expert, but he knows the trend, can discuss changes in the general level, and is sufficiently well posted on rate-making procedure to discuss intelligently and channel properly his client's rate propositions. He knows that his customer's business suffers when goods fail to reach *his*

customer in good condition; he may suggest a change in loading methods or offer to bring around his road's claims prevention expert for a "consultation."

Having studied the shipper's line of business, the salesman can suggest possible changes in marketing and sources of supply, extension of his client's sales effort, and relocation of factories and distributing warehouses to take advantage of rate characteristics. He remembers that railroad traffic departments practically set up the California citrus growers in business and that the early merchandising of anthracite coal, against natural public suspicion, was a railroad accomplishment. He observes that, today, railroads are doing more than any other single industry in the country to help their customers find new markets in South America. He keeps intact the "feel" of mutual interest with the shipper—like the traffic manager of a pioneering western railroad who, when asked why he did so much to find markets abroad for the grain of the settlers along the line, pointed to the prairies newly broken by the plow and remarked, "Our railroad will always have a part interest in those fields, and I aim to keep their managements properous."

The New Competition

Many old-time solicitors' principal concern was to take business away from other railroads. Their modern counterparts are also aware that railroads are separate corporations and that one can go bankrupt even if the industry as a whole flourishes. But they know that their greatest problem lies in holding or bringing traffic to the rails; that they must fight just as hard against Joe's Motor Express and Blank Barge Lines as against rival railroads. They know they must help to create "new" traffic.

The modern freight salesman has sufficient information about the rates and services of the railroads' highway and waterway competitors to figure out realistically his own talking points. He understands the nature of private and contract carriage and, with his knowledge and experience, can decide when a shipper seeking rate concessions is bluffing with a phantom rate or whether he really means business.

A decade or so ago, shippers used to say that too many railroad freight solicitors ignored what the trucks had to offer; that they clung to the notion that there was a hard core of traffic which the railroads could never lose; and that they spent their time trying to get "our road's share" of a constantly diminishing residue. But, with contract trucks moving steel sheets halfway, and fruits and vegetables all the way, across the country, the modern salesman knows the measure of his job. There is no "core" to protect him.

The up-to-date freight salesman, like his counterpart in manufacturing, is sufficiently well-posted on rates and costs to know upon what types of business he should concentrate his attentions. Industrial sales organizations check closely with their production departments; they push the big earners, soft-pedal the "public service" items. A railroad has the duty, of course, of servicing everybody and every commodity at a fair rate, but its public utility status does not require that its salesmen spend their limited time soliciting parasols, lampshades, and empty boxes, when the same effort on a carload of high-rated material would put something into net. The day is gone—on modern railroad sales staffs—when a man's worth can be judged solely by the number of cars he claims to have procured.

How Do They Get That Way?

Clearly, to produce this modern freight traffic representative requires more training and education than were accorded his predecessor. Individual roads are turning increasingly to intensive programs which, with a mixture of job rotation and classroom education,

Facing page, left—Proper loading is one of the by-products of successful salesmanship

Facing page, right—Service to customers includes good care of their merchandise while it is in the carriers' possession

Above—Modern devices for keeping records help the salesman by making all information about all shipments quickly available

Above, right—"Familiarity tours for traffic men are paying off in increased knowledge of terminal and road conditions. This group is on the Baltimore & Ohio, at Chicago

serve not only to create well-informed salesmen, but to weed out the patently unfit before it is too late. The Pennsylvania, for example, has for some years trained its young traffic men on the theory that you can't give them too much experience, but that you must watch their progress carefully, and constantly counsel and guide them. It assigns special officers to the job of producing good traffic men and has developed a comprehensive program for their guidance.

In addition to formal training and apprenticeship, these rapidly changing times require that salesmen be kept informed of the latest developments in the product they sell. Hence, many railroads are going in for over-the-road tours, refresher lectures and serious "staff get-togethers" which serve to re-acquaint the salesmen with their roads, give them the latest service improvements and stir up their imaginations for new sales ideas. The Baltimore & Ohio takes its traffic men in turn through every major terminal on the system. Among others, the New York Central and the Southern have operated "back-stage" tours of their properties for joint participation by traffic men and their customers.

Modern Methods Used

In connection with its introductory tours of the Southwest for writers and financial men, the Missouri-Kansas-Texas used the opportunity to show some of its traffic salesmen their road's territory. The Toledo, Peoria & Western last year held a dinner to which it invited all its off-line salesmen and a large number of its shippers, and explained to them the service improvements accomplished and under way. The annual "Better Service Conference" of the Norfolk & Western, while designed for all departments of the road, is specially valuable for solicitation staffs. Last year the Southern assembled 250 of its traffic men at a conference to discuss how best to hold and build freight traffic. Representatives of the departments that produce the transportation told the salesmen what they had to offer. Experienced traffic men told "how they did it."

Recently, W. W. Belson, director of public relations for the American Trucking Associations, told some of his fleet owners what kind of sales methods are necessary in the trucking business today. "In the past," he said, "much of the sales effort revolved about the friendly, social-type approach, featuring a call on the traffic manager 'just to let you know we are still in business and anxious to serve you.' Today's sales approach must be based on a careful analysis of the needs of the customer transportation-wise and a planned coordination of those needs with the carrier's service facilities."

Keep your eyes on the railroads, Mr. Belson.

ON-TIME PERFORMANCE

PAPER-WORK SPEED-UP

Any failure of railroad paper work to keep up with train movements can delay delivery of freight as effectively as can a broken rail or a derailed car. Without completed paper work, freight cannot be released to connections or to the consignee. Sometimes bad paper work is responsible for claims, just as is rough handling of a train. With the heavy volume of traffic which the railroads have been handling in the postwar years, it has become more important than ever to have the clerical work in step with the movement of trains. Consequently, the camera, various types of visible records, and a variety of mechanical devices have come into widespread use on the railroads to help get the necessary papers to destination at the same time as the train, or even ahead of it. While real progress has been made in the past few years, railroad officers most familiar with the situation agree that there still are opportunities for improvement.

A typical case of what one railroad has done to cut train delays caused by slow completion of paper work is that of the Seaboard Air Line. At its Hermitage (Richmond, Va.) yard, the Seaboard interchanges cars with other lines. Several years ago it was not uncommon for trains to stand in the yard, ready for delivery to the connecting road, while the work of making out interchange reports was being finished. To eliminate this, the S. A. L. installed the Remington Rand "Film-A-Record" camera, which copies all necessary data in a few minutes. Now the clerical work is done by the time the cars are ready for delivery, thus eliminating many costly delays.

The list of railroads using photographic processes to expedite the movement of trains to connections is too large for this limited space. However, the example of the Rock Island may serve to illustrate how widespread this practice has become. Recordak cameras have been installed by that line at Chicago, Ill., Burr Oak, and Joliet; Memphis, Tenn.; Kansas City, Mo.; Armourdale, Kan.; Council Bluffs, Ia.; and Fort Worth, Texas. Usually these filming devices are put to other regular uses in addition to the preparation of interchange reports, such as filming shipping orders which have been given waybill numbers, making the new waybill required when diversions are made, and obtaining information on the conditions of refrigerator cars (e.g., the amount of ice in the bunkers and data on heating or ventilators) being delivered to connections.

Pennsylvania Uses New Process

In handling l.c.l. freight, filming of shipping orders which have been given a waybill number has long been a practice on the Pennsylvania for local traffic. When the harmonized bill of lading was introduced it became possible to use this system for interline traffic also. There still remained the problem of preparing prepaid freight bills at the origin station when the consignees were on the accommodation list, and of the freight bill at destination. Now, through the use of a Photostat machine and the Bruning Black and White printer as many copies of an error-free freight bill can be prepared as are necessary, and at the very high rate of 2,000 bills per hour.

Some years ago the Southern Pacific, to avert failures of waybills and other necessary documents to reach the destination station by the time the freight arrived, began using a system of teletyping local l.c.l. waybill-freightbills at the origin station. With this system a teletype printer automatically prepares identical documents at the destination station or transfer point. Thus all documents needed for delivery of the freight are available at destination before the freight arrives. This

REDUCES DELAYS IN FREIGHT DELIVERY

procedure greatly reduces "overs" caused by late receipt of billing.

The Southern has developed a method of matching "overs" and "shorts" that has been of considerable help in getting freight to its destination. When an "over" shipment arrives at a station, a salmon-colored card is made out and placed in a visible-record file. Yellow cards are made out for "shorts" and an attempt is made to match the overs to the shorts. Copies of all cards for O & S shipments which the agent cannot match are sent to the office of the freight claim agent in Atlanta, who then is able to match up many of those received. The Southern has found that this method results in proper, if delayed, delivery of a great many astray shipments, and sooner than was formerly possible.

Claims Handled Promptly

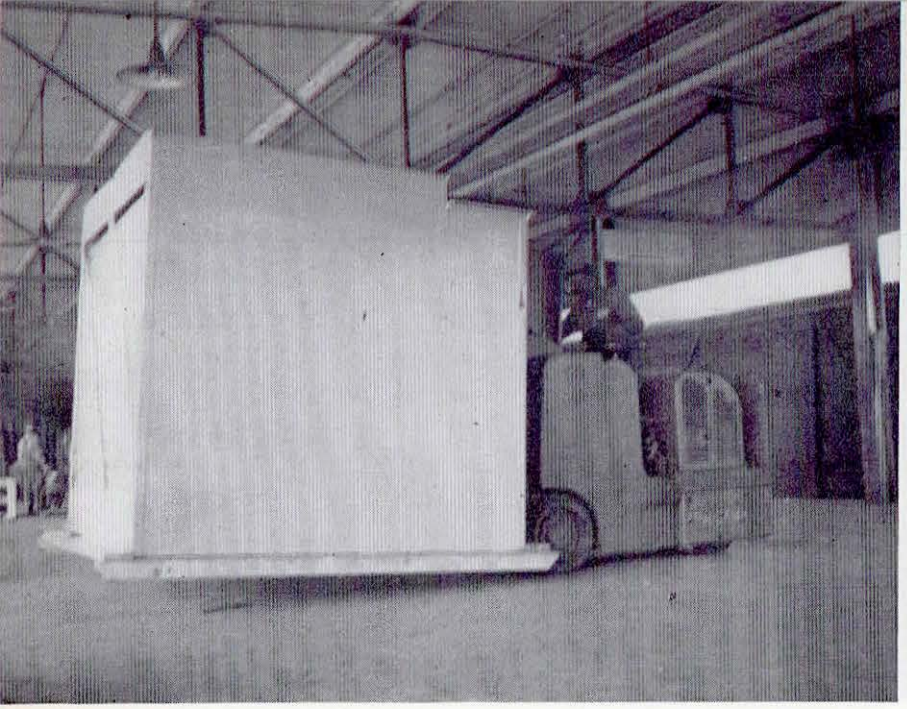
Claims, whatever their cause, are an annoyance to both shipper and carrier, and should be handled speedily when they cannot be avoided. The Burlington, for example, has authorized its agents to settle many claims by telephone. No acknowledgment is made except the payment draft, which also is the Burlington's record of payment. Using this system, in 1948 the Burlington paid nearly 27,000 small claims within 48 hours of receipt.

The Pennsylvania has a standard procedure for handling claims, to which that railroad attributes a great deal of its success in reaching settlements in most cases within 30 days of receipt. It asks shippers to send claims to the destination agent, preferably, or the agent at origin. That agent then forwards the claims to the freight claim agent, together with his records on the shipment. The freight claim agent sends an acknowledgment to the shipper, reviews the case and settles or denies the claim.

Car records are one of the basic sources of information for all freight tracing. Many railroads, such as the New Haven, Western Pacific, Northern Pacific, and Boston & Maine, have gone into the use of punched cards and electric tabulating machines, plus extensive teletyping networks, to handle these records. Others, including the Missouri Pacific, have adopted visible record systems for recording car movements.

Fewer Errors in Diversions

Practically every shipper has had occasion to make changes in plans which have led him to instruct a railroad to make diversions. Sometimes errors by the railroads have let the car get through to original destination. To minimize failures to comply with diversion orders, the New Haven, for example, has set up a visible-type diversion record. When a notice of diversion is received, colored cards are made out for each car to be diverted. Cards are filed on a rack in car number order and are visible at all times. As cars enter a yard it is comparatively simple for a clerk to look at wheel reports or humping lists and compare the numbers on these documents with those car numbers on his diversion order rack. Once the diversion has been accomplished the card for the diverted car is pulled from the rack and filed. Because all information is quickly visible and because cards for completed diversions are promptly removed from the rack, confusion and chances for error have been reduced to the point where failure to divert is a rare occurence.



MONEY—AND WOE—IN SMALL-LOT SHIPMENTS

Freight movement in the United States displays two contrasting tendencies. On the one hand, large shippers are aggregating big minimum offerings, the extent of which enables them to utilize private and contract transportation by water, highway and pipe line to a greater degree than ever before. On the other hand, there exists a trend toward a relative increase in the number of small-lot shipments, a result of businessmen's desire for a minimum inventory so as to escape the effects of quick fluctuations in style and violent price changes. This means, of course, that the railroads tend to suffer a diminution in their carload traffic, which they must recapture as less-carload.

A Waning Portion of Railroad Traffic

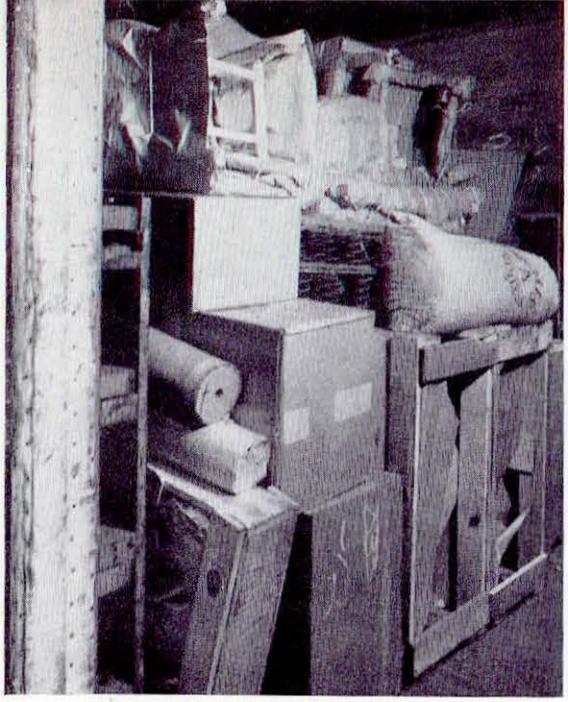
In 1948 revenues from l.c.l. constituted 6.3 per cent of total gross freight revenue of the railroads, while less-carload traffic originated constituted 1.2 per cent of their total freight tonnage. As the table herewith shows, l.c.l. has comprised an increasingly smaller proportion of the total business done by the railroads since 1920. Although the index of all railroad revenue ton-miles in the first half of 1948 was 193 (average 1935-1939=100)—or slightly above the Federal Reserve Board's index of industrial production—the index of railroad l.c.l. traffic was at a level substantially below the production index.

In the first 15 weeks of the present year, loadings of l.c.l. fell 15 per cent below the same period of 1948, and 22.5 per cent below 1947, compared with decreases of 7.2 and 13.9 per cent, respectively, for all loadings of revenue freight. While total carloadings in 1948 were up 26 per cent compared with prewar 1939, l.c.l. loadings were *down* 30 per cent. This decrease undoubtedly was, to some degree, affected by a higher load per car, because tons of l.c.l. originated in the first three quarters of 1948 (latest totals available) increased 26 per cent compared with the same period of 1939. But, at the same time, total tons of all freight originated by the railroads increased 79 per cent. And, simultaneously, common carrier truck tonnage—most directly competitive with railroad merchandise traffic—went up 120 per cent.

It is obvious that the railroads' small-lot traffic has not kept pace with population, with production, with the railroads' overall traffic, or with truck traffic.

Is L.C.L. Profitable?

The question may be raised whether the loss of merchandise traffic may not be a good thing for the railroads. In its decision on increased l.c.l. rates in Official territory, dated October, 1948, the Interstate Commerce Commission noted that l.c.l. operations of nine selected large merchandise-carrying railroads in the East produced cost-to-revenue ratios of 152 per cent. In that proceeding, the railroads sought increases in l.c.l. rates ranging from 1.5 to 95 per cent over existing first-class levels and from 10 to as high as 110 per cent



Above—The diversity of l.c.l. freight makes terminal handling a chronic problem

Above right—Some railroads use highway-trailer-on-flat-car service to speed up and eliminate station handling of their own l.c.l.

over present exceptions ratings, with the increases diminishing as distance increases.

The I.C.C. denied the increases on the ground that the rates proposed would constitute a complete departure from the manner in which class rates applicable on carload and l.c.l. traffic, respectively, had been constructed in the past. It so decided, despite the fact that, in numerous decisions on rate applications (namely, in 1935, 1936, 1937 and 1945), the commission itself had strongly urged the roads to make l.c.l. rates "compensatory, if possible." There is good reason to believe that that objective was exactly what the Eastern roads had in mind in their petition—to make rates which would reflect the greater impact of terminal costs in handling l.c.l. They recognized "the possibility of some diversion of traffic, particularly for short hauls," but held that such "diversion of a short-haul traffic, where the greatest revenue deficits are incurred, should not adversely affect the carriers."

The I.C.C. subsequently scheduled a rehearing in the case (docketed as No. 29770) on the understanding that the railroads will submit new alternative bases of increases. If the Eastern roads' petition eventually is approved, the result of the new rates may be to "prove out" the statement often made by railroad traffic men that l.c.l. on the railroads is not inherently unprofitable, but that it is presently handled at a loss (at least, on a full-cost basis) because:

(1) The present rates and ratings do not sufficiently reflect the wide variations of costs incurred with different commodities and lengths of haul; and

(2) The trucks and forwarders have taken the "cream" of the traffic.

The I.C.C., in the decision cited above (October, 1948), stated that forwarder and truck rates were then about six per cent higher than rail l.c.l. on small (therefore, less desirable) shipments under 5,000 lb. Forwarder receipts per ton in 1946 averaged $43.66, compared with average revenue from railroad l.c.l. of $28.60 a ton. Revenues of selected Class I common carrier truckers in the same year averaged about $10.50 a ton—the effect principally of a low average haul, not lower revenues per ton-mile. In 1939 (the latest year for which comparative data are available), the average revenue per ton-mile of 948 Class I common carrier trucking companies was 3.82 cents, while railroad l.c.l. brought in a lower average ton-mile revenue of 3.56 cents. Since the truck average included truckload and multiple-truckload shipments it is evident that the trucks, by deliberate picking-and-choosing, handle the more profitable shipments.

There is a school of thought which holds that the railroads' structure of rates for l.c.l furnishes a perfect "umbrella" under which the truckers and forwarders may select traffic "plums" at will, leaving to the railroads the undesirable remnants; that traffic which is rated by the railroads first and second class, in particular, is vulnerable to outside competition; that, on an actual cost-of-production basis, the railroads could handle the more desirable of these high-rated shipments for given distances more cheaply than the trucks; and that this traffic would give them a profit if they could rid themselves of the undesirable business or raise rates enough to cover their costs.

Lose More Without *Than* With

Whatever the truth of these assertions, or the prospect of greater flexibility in the railroads' rate structure, railroad and industrial traffic men seem to agree that

Without ostentation, a "boom" expansion of coordinated truck service for merchandise is proceeding in all parts of the country

Facing page—Containers for speeding up and cutting the cost of merchandise service continue under active development

the roads cannot get out of the l.c.l. business if they would. As one traffic manager put it, "Even if the railroads do everything possible to discourage l.c.l. rail traffic, they will be required to retain the humiliating role of handling the dregs, which they can never 'wish off' on the truckers or forwarders. This necessity will severely limit the possible basic savings in manpower, facilities and train operation."

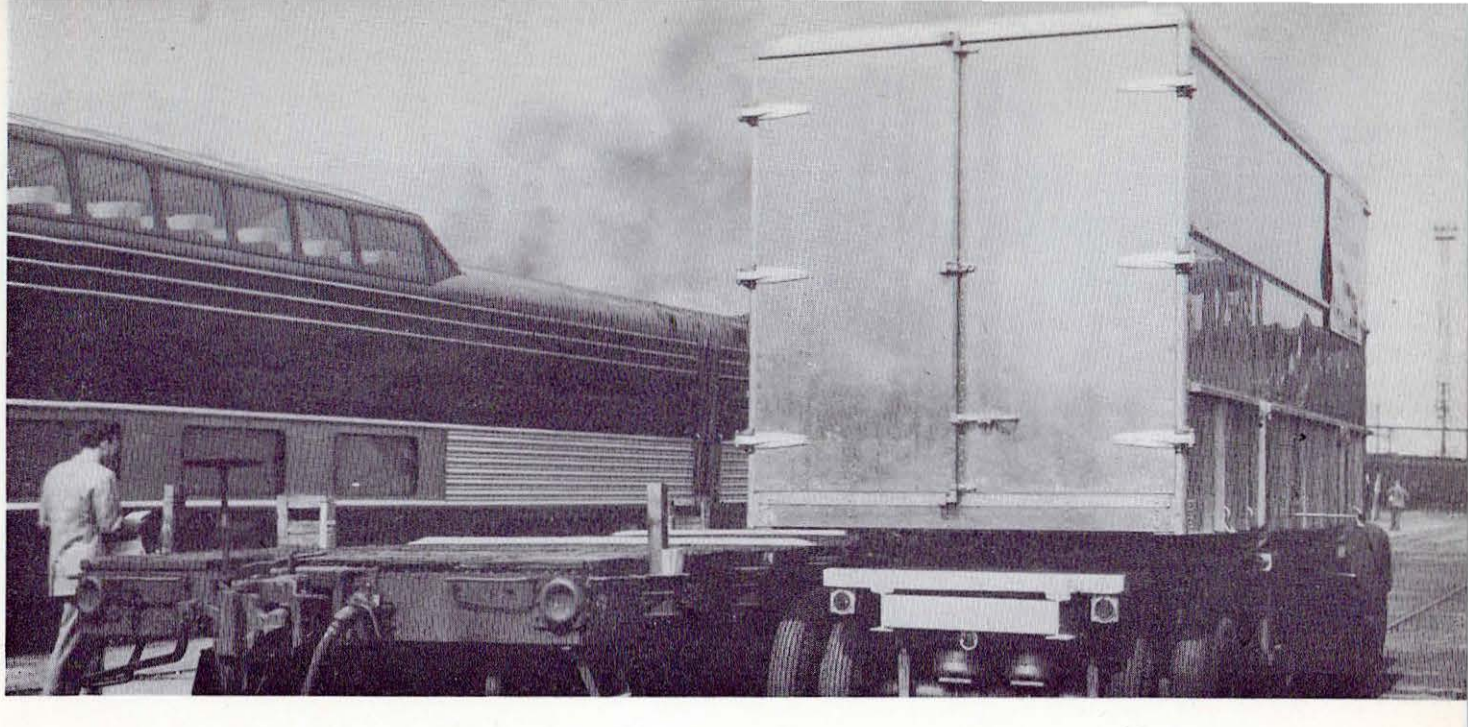
The railroads, generally, haven't given up the idea that l.c.l. can be made to pay. The western roads have gone so far as to assert that, even under present discouraging conditions, l.c.l. business brings in more money "net" than would be saved if the railroads had no l.c.l. traffic at all. Contending that, "from a transportation or cost standpoint, l.c.l. is a byproduct of carload transportation," Western District Class I roads took a close look at their operations in the month of August, 1948, on the basis of which they concluded that, last year, they gained more than $34 million more "net" than they would have had if l.c.l service been discontinued entirely. First, they estimated the expenses of operation which could be "avoided" by eliminating l.c.l.—such as transfer platforms, extra switching moves, etc. Those items came to $144,407,000. This amount they subtracted from total gross revenues from l.c.l. of $178,617,829. The difference was $34,211,000, representing the *contribution* of l.c.l. to earnings of the roads. The avoidable, or "out-of-pocket," cost of l.c.l. was found to constitute 80.8 per cent of total gross revenues therefrom.

What of L.C.L. Service?

For some years past, the railroads as a whole have not been "happy" about the *general* standard of their merchandise service. The particulars and the reasons therefor have been well aired at regional shippers advisory board meetings. The zone of trouble, most people think, has been in the terminal handling, where the benefit of modern, fast performance on the road has been negated by congestion and delays.

About 75 per cent of merchandise traffic is interline. Hence, good service by an individual carrier may be offset by poor performance by its connections. Some traffic managers say that the greatest need in railroad l.c.l. service is not spectacular improvements by carriers already doing a good job, but a general upgrading of the service by all, especially along the line of an increase in the number of through interline cars to avoid congested transfers, and expedited handling at interchange points. Some railroad traffic officers strongly recommend that the Association of American Railroads establish a permanent department for the promotion of merchandise service, which, among other things, would formulate standard practice for interline handling.

Entirely apart from the technical and administrative improvements which many roads are making, the passing of congestion and expiration of the O.D.T. minimum loading rule for merchandise cars alone should produce substantial improvement in l.c.l. performance. It is difficult to measure countrywide service standards, but it is worthy of note that of the 45,159 merchandise cars loaded out from Chicago during January and February of this year, 62.1 per cent reached destination on time, compared with 50.6 per cent during the same



period of 1948—despite the unprecedented snow blockades in the "Blizzard of '49."*

The operation of fast solid merchandise trains at virtually passenger-train speeds between important cities—which was inaugurated during the depression—is again being expanded and improved. The New York Central, for example, last month extended the orbit of its colorful "Pacemaker" equipment to include New England, so that the whole service now utilizes a pool of 1,000 specially designed high-speed box cars. In the face of a general decline in the total railroad l.c.l. volume, "Pacemaker" tonnage has climbed steadily; it now handles from 10 to 15 per cent of total merchandise tonnage of the Central.

The still wider field of overnight (and comparable) service for important carload, forwarder and l.c.l. traffic is also being expanded on a wide front. A separate tabulation in this issue lists a total of 110 overnight runs of 300 *miles* or over now operated by 30 roads, compared with 95 runs by 28 carriers a year ago.

Specialized car equipment for merchandise is on the increase, featuring not only high-speed and easier-riding betterments—such as improved draft gear and truck springing—but, as well, interior loading devices (of outside or railroad design) which serve to increase safe-loading capacity, speed up handling and reduce damage. The Pennsylvania reports, for example, that the special merchandise box cars which it placed in service last year "have more than doubled the tons handled per car and have virtually eliminated damage to lading in transit."

Some railroads are making increasing use of passenger trains for fast merchandise service, to win and hold profitable traffic, where volume would not justify the operation of a super-fast freight train—despite the fact that crew costs per train-mile are usually higher when freight cars are added to passenger runs. The Denver & Rio Grande Western; Colorado & Southern; St. Louis-San Francisco; Spokane, Portland & Seattle; and Texas & Pacific are among the roads offering this service.

* Data from "Way to Ship" bulletin of the Chicago Association of Commerce & Industry.

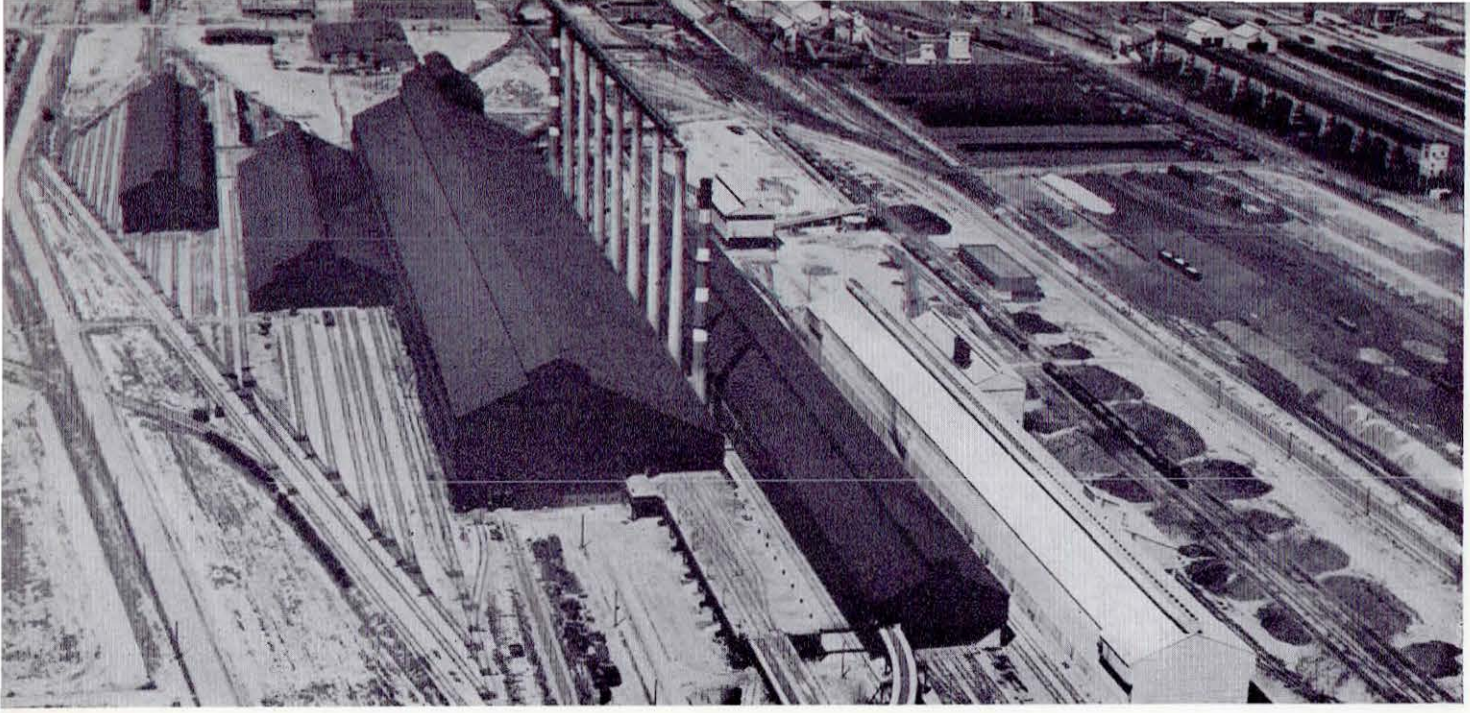
Importance of L.C.L. to Railroads—Then and Now

	Tons Originated Per Cent L.C.L. to Total	Gross Freight Revenue Per Cent L.C.L. to Total
1920	4.3	*
1929	2.7	10.4
1939	1.7	7.5
1945	1.5	5.6
1947	1.5	7.1
1948	1.2	6.3

*Not available

The maximum effectiveness of these fast rail freight services is obtained when trucks are used to fan out the traffic from key breakbulk points along the route of the "hotshots." The Santa Fe, for example, gives second-day delivery to 300 points in Kansas and Oklahoma by using subsidiary truck service from five key rail stations in connection with overnight trains from Chicago.

Now that the novelty of railroad trucking has worn off, it is, perhaps, not realized that the use of motor transport to supplement or replace train service for l.c.l. is booming, despite tight I.C.C. restrictions looking toward "rail-binding" the goods which may be so handled. To name only a few lines, the Missouri-Kansas-Texas extended its truck operations to Oklahoma in 1948, and expects to set up operations in Missouri this year. The Burlington is planning to make its motor subsidiary a more fully integrated arm of the railroad, in a vast expansion of coordinated service, though its trucking operations have long been large. The Big Four district of the New York Central has embarked on an intensive program of coordinated service in Ohio, Indiana and Illinois. The Seaboard Air Line is building up a network of local and branch line substation services. The Southern Pacific, with a number of subsidiaries which have long engaged in both independent and rail-coordinated trucking operations, is still actively pursuing expansion of the latter in aid of overall rail service.



CAPTURING INDUSTRY ON THE MARCH

Expansion and decentralization changing traditional traffic patterns — relocation a challenge to the carriers — some will gain and some will lose

Industry is on the march. In the present state of flux, it is not easy to predict how the carriers, individually or collectively, will fare when migratory trends stabilize. One thing is sure; the predominant trend is southward, southwestward and westward, away from traditional production points. But, some trend analysts say, it is not so much marked by relocation of entire industries as it is by expansion through establishment of "satellite" facilities away from home plants, except in cases where national defense considerations are paramount.* They say there is little foundation to the notion that the great industrial East is drying up. On the contrary, many eastern industries have built new plants or expanded existing facilities.

Decentralization Good and Bad

Table 1 shows that from 1940, the last full prewar year, to postwar 1946, the total tons of freight originated increased in all regions, and doubled in the southwest. Nevertheless, at least one of the three Eastern regions—New England—originated a greater percentage of the total U. S. tonnage after the war than before.

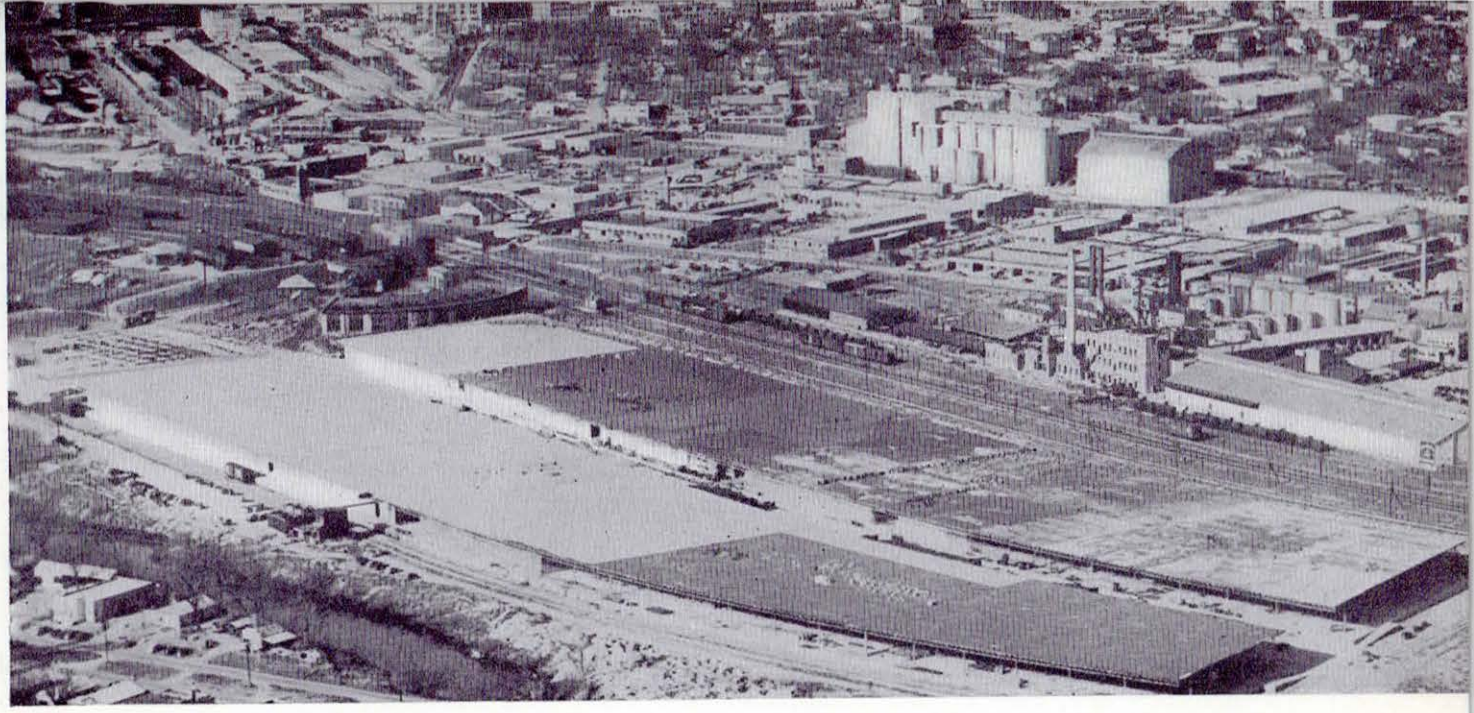
Decentralization no doubt reduces the total volume of long-haul traffic. It generates short-haul traffic, and so increases the vulnerability of the railroads to truck competition. However, many of the new industrial developments are either assembly plants (Ford at Los Angeles; General Motors at Kansas City, Kan.) or centralized warehouses (International Harvester at Chicago; General Motors at Memphis). The former create a long-haul movement of semi-finished products which load heavily and produce good revenue for the carriers, while the latter type of development creates bulk movements to the distribution points, producing carload traffic which might otherwise go in truckloads to individual consignees.

Industrial growth, particularly in the new areas of expansion, calls for heavy capital expenditures for railroad facilities and betterments to handle changed and increased transportation requirements. While rail-

TABLE 1—REVENUE FREIGHT TONNAGE ORIGINATED, CLASS I LINE HAUL CARRIERS

Region	1940 (000)	Per cent of U. S. Total	1946 (000)	Per cent of U. S. Total
New England	15,558	1.54	23,217	1.70
Great Lakes	169,962	16.84	208,000	15.21
Central Eastern	244,044	24.18	322,003	23.55
Pocahontas	116,597	11.56	134,041	9.82
Southern	136,375	13.51	206,614	15.13
Northwestern	148,726	14.73	180,081	13.18
Central Western	116,148	11.50	188,044	13.75
Southwestern	62,010	6.15	104,617	7.66
United States	1,009,420	100.00	1,366,617	100.00

* Chance Vought, for example, moved its military aircraft plant bodily from Connecticut to Texas (described in *Railway Age* of November 6, 1948, page 36).



War-built Geneva Steel Plant, near Provo, Utah, is in peacetime production for the United States Steel Corporation

The Alford Refrigerated Warehouse Company is completing a refrigerated warehouse (foreground) described as the world's largest, at Dallas, Tex., in the Trinity Industrial District. The plant, served by the Chicago, Rock Island & Pacific, will have capacity for 160 cars, and refrigerated storage space in excess of seven million square feet

road properties thus improved are in an enhanced position to attract new business, the cost of modernization is adding emphasis to the need for greater income and a fair return on investment.

A Challenge to the Railroads

Some industrial relocation is resulting from higher freight rates, some from uncertainty about the legality of "basing-point" pricing, and some from government pressure—via the National Security Resources Board—for decentralization for national defense reasons. A still bigger reason is the overall growth in population, particularly in regions far removed from the older manufacturing areas, and a greater demand for consumer products resulting from a higher per capita income.

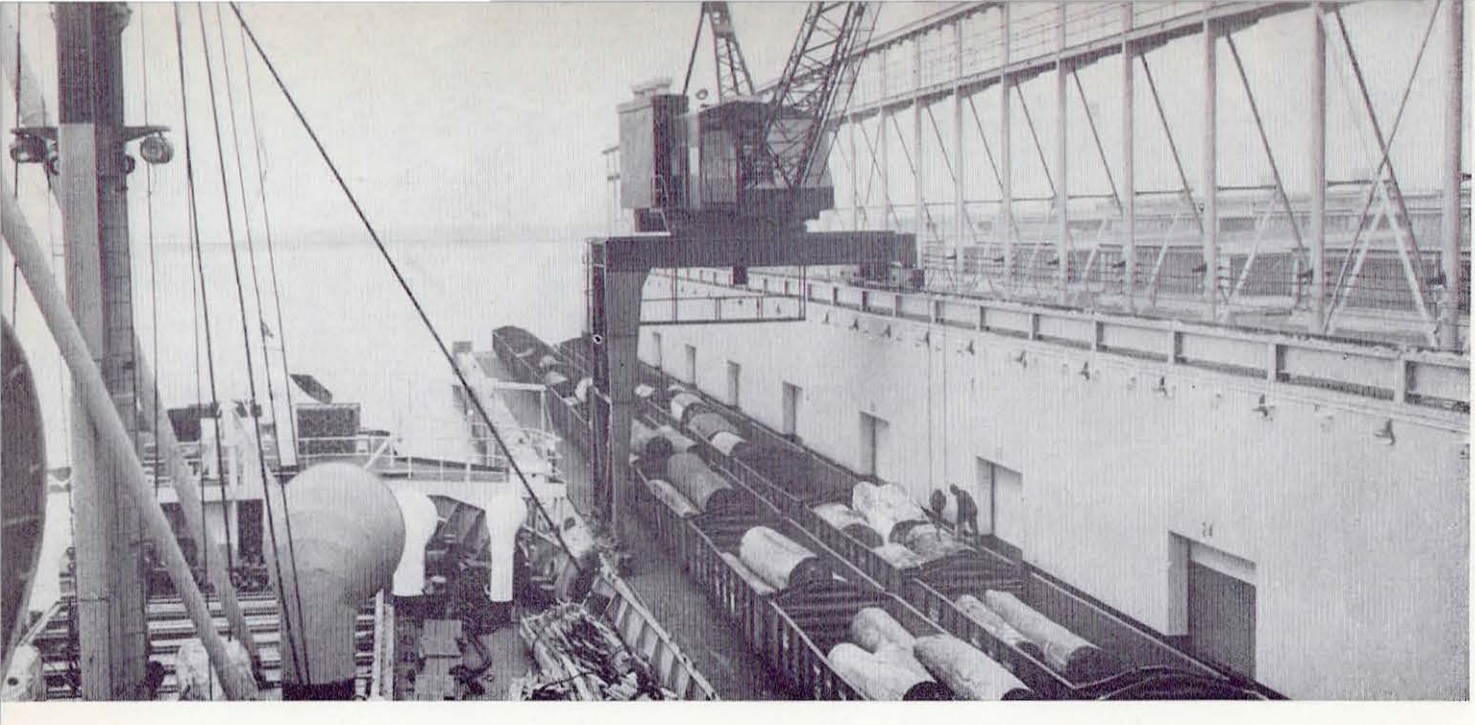
Most carrier industrial departments are armed with a wealth of factual data about the territories they serve. Often they are the best source of information on the availability of sites, labor, housing, raw materials and utilities; wage scales, utility rates, tax rates, soil and climatic conditions, and other particulars pertinent to plant location, and, of course, transportation rates and service. With such data at hand, the railroad industrial agent is more a partner than a salesman in helping industry to locate new plants. Here are some examples selected from many instances at hand:

The *New York Central* has published a booklet entitled "Here's help in finding a 'Central' location for your new plant," which does not attempt to outline specific industrial advantages in the widespread area served by its system, but tells how its industrial development department works and how it can aid, not only in locating plant sites, but also in handling many of the detailed negotiations preliminary to the actual construcion of the facility. The *Pennsylvania* promotes a "one package job" through arrangements with architects, engineers, contractors and investors for a complete building, to the industry's specifications, at a flat rental per square foot for the desired term of lease and renewal periods.

The *Atlantic Coast Line* outlines the agricultural advantages of its expanding Everglades area in a 20-page pamphlet called "Pay Dirt." Soil conditions, irrigation projects and production potentials of the new Okeelanta branch are described therein. The *Seaboard Air Line* staffs its agricultural and industrial development department with engineers, foresters, a geologist, and graduates of agricultural colleges who have had practical experience. Promotion work recently included a tour conducted for northern and midwestern vegetable growers through the Florida vegetable growing areas. Before the tour was completed, several of the visitors had concluded arrangements for the establishment of farming operations in Seaboard territory.

The *Southern* has been sponsoring industrial tours of the cities it serves with a view to alerting local business men and civic leaders to the existing—and sometimes latent—industrial advantages "right under their noses," stressing the availability of good transportation.

In the past three years nearly 1,000 new factories, 100 large warehouses and 300 substantial additions to existing plants have been built along the Southern's lines. These promotion activities have been supported by a vigorous advertising campaign through



national magazines with the theme, "Look Ahead—Look South."

The *Chicago & Eastern Illinois* is conducting a survey to develop natural resources, facilities and plant sites along its lines, and will follow its research with a publicity program. The *Gulf, Mobile & Ohio* has employed an industrial engineer who is compiling data on natural resources, water power and other information which will indicate logical locations for particular industries along the Alton Route.

Information for Solicitors

The *Union Pacific* circularizes all its traffic representatives and general agents, keeping them informed as to available industrial properties on the system so that they are at all times prepared to advise prospects. Brochures have been prepared to portray the advantages of the larger cities served by the U. P.

Since the *St. Louis-San Francisco* extended its system to include Mobile by acquisition of the Alabama, Tennessee & Northern (see *Railway Age* of January 15, page 34), the Frisco's agricultural and industrial development department—headed by a newly created assistant to the traffic vice-president—has stressed the advantages of the growing port of Mobile. Extensive surveys are under way in the Frisco's territory to enable the department better to inform site seekers about its advantages.

The *Pittsburgh & West Virginia* is another of the roads that has recently completed industrial surveys of its territory. This road reports that a large number of firms are seeking to locate in the Pittsburgh district because of the basing-point decision.

The coal roads in the Pocahontas region have launched programs to attract industry in order to achieve diversification of traffic. The *Norfolk & Western* conducted a vigorous advertising program in leading magazines and newspapers throughout 1948, and is continuing it this year. Booklets entitled "Mineral Resources Along the Line of the N. & W.," "Industrial Opportunities in the Land of Plenty," and "Agricultural Opportunities in the Land of Plenty," outline the natural and transportation advantages of locating in N. & W. territory.

Last autumn the *New York, New Haven & Hartford* played host to two groups of industrial realtors, engineers, architects, newsmen and financial representatives on inspection trips of sites and buildings along the New Haven. The first group—consisting of 50 persons—visited 22 communities and 28 sites in a three-day tour. The second group made a similar tour out of Boston.

Eastern Press Tours Southwest

The *Missouri-Kansas-Texas* last October took nearly a hundred newspaper and financial writers on a nine-day tour of the Southwest so that they might see first-hand—and take home to their readers— the remarkable development that has taken place in that area. It not only gave the press an opportunity to see the Southwest; it gave the communities visited an opportunity to be host to the newsmen. Business and civic leaders entertained the visitors, stressing industrial opportunities in their territories. While the value of the publicity thus received could hardly be measured by weight, it is an interesting fact that a compilation of all the resulting write-ups in leading newspapers and business papers throughout the country tips the scales at more than five pounds.

In January, 1948, the Katy, together with the Oklahoma Bankers' Association and the Second National Bank of Houston, sponsored a tour for soil conservationists, bankers, industrialists and newspapermen through Eastern Oklahoma by special train. Civic bodies and soil conservation agencies joined forces with the visitors at local points and inspected soil improvement practices which have been introduced in the areas. Each evening mass meetings were held in community

The Henry J. Kaiser Company at Pleasanton, Cal., ships an average of 160 carloads of sand and gravel daily

Modern railroad-owned transshipping facilities encourage the rail movement of import and export freight

Railroad capacity is adequate for heavy burdens

halls. Farmers and business men interested in the furtherance of soil conservation and improvement were invited. The M.-K.-T. has published and widely circulated a brochure, "Southwest, the New Industrial Giant," with informative editorial and pictorial information about the area served. In addition, brochures have been prepared on various cities and towns on the Katy listing prospective site locations for specific industries.

Principal realtors from New York, Newark and Philadelphia will shortly be conducted on a tour of adaptable industrial sites along the *Lehigh Valley*. That road's industrial department has on hand detailed information about the area it serves—not only industrial information, but also social, educational and recreational data for each community along the line. Both the Lehigh Valley and the *Delaware, Lackawanna & Western* use their passenger timetables to advertise the accomplishments of their industrial departments. Each new issue features an illustrated write-up about a new plant which the industrial development department has located along the railroad.

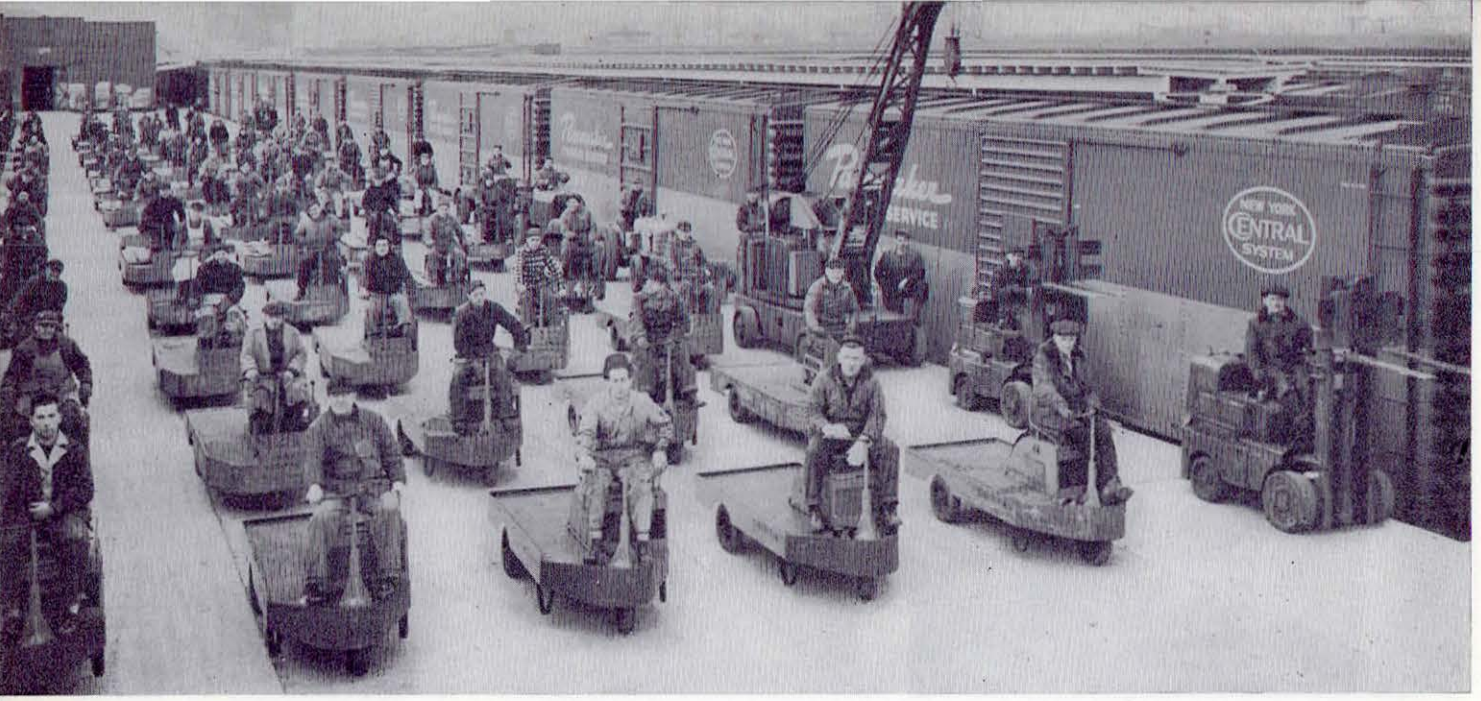
The *Illinois Terminal* has increased its advertising program and recently conducted a press and radio tour through its terminal areas.

The *Chicago, Rock Island & Pacific* works with state and municipal organizations in the promotion of new industry, and with state geologists in the development of natural resources. The road has opened new industrial districts in a number of cities, cooperating with private realtors and utilizing its own land. A large industrial area has been purchased at Denver and will be opened this year. The promotion of watermelon growing in Oklahoma has developed a substantial tonnage of this product.

The *Boston & Maine* has run a three-year advertising program in national magazines pointing out the advantages of northern New England as a place to live and work. The road has produced a color and sound motion picture, "Industrial New England," which shows some of the B. & M.-located plants producing nationally known products, and the railroad service available.

The *Canadian National's* department of research development has completed surveys of the Alberta oil fields, and is now engaged in a preliminary survey, to be followed by a more extensive one, of Newfoundland, whose railways the C. N. has recently taken over. The *Grand Trunk* is working in cooperation with the Detroit Metropolitan Area Regional Planning Commission and the state of Michigan department of economic development to induce industry to locate in territory on its lines, and to prevent emigration of industry from Michigan. The Grand Trunk, the *Chesapeake & Ohio* and the *Port Huron & Detroit* cooperated recently in an extensive survey of the St. Clair River valley between Port Huron, Mich., and Marine City, to develop potential industrial sites.

The *Missouri-Pacific* has published a 51-page illustrated "Handbook of Ports Served," a guide to shipping facilities available at Gulf ports and Mexican gateways reached by the M. P. Detailed information regarding dock and wharf facilities, depth of water, provision for handling special cargoes and storage space are included. A complete map showing the location of all wharfs, piers and docks accompanies the description of each port. One section of the book is devoted to foreign procedure, setting forth the ramifications of import and export trade.



STATION MECHANIZATION CONTINUES

Further developments will come if traffic volume is assured and more shippers adopt unit-load principle, but present gains may be nullified if volume is allowed to drop

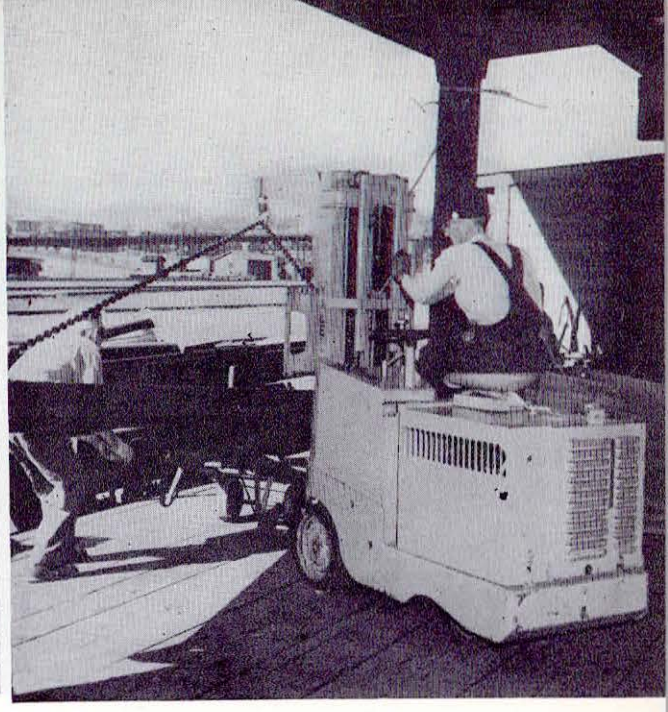
During the year since the last Freight Progress Number appeared, real advances have been made by the railroads in improving labor efficiency in handling freight at stations. For instance, the Northern Pacific has effected improvements which have raised the productivity of labor at one station by 22 per cent during the period from January, 1947, to December, 1948, and during 1948 alone by about 8.5 per cent from the previous year. At another N. P. station, where all freight is handled with mechanical equipment, the average production in tons per man per hour was raised 15 per cent during 1948. In the first two months of 1949 this advance continued.

The Lackawanna is another railroad which has had some fine results from its mechanization program. At its Binghamton Transfer, for example, labor efficiency has been bettered about 27 per cent through the use of platform burden carriers and the fork truck. In bulk handling at its Hoboken Terminal Piers the results have been even more significant, for the improvement there in two years has been more than 40 per cent.

The achievements in improving freight handling by these railroads are not isolated instances, and most railroads which are handling their l.c.l. or export freight with industrial trucks are experiencing somewhat comparable results. While the rising cost of labor and materials has tended to offset, in part, the savings made, a serious decline in l.c.l. traffic, no matter what the cause, can undo the work of years. Many railroads mean to avert this occurrence, and their traffic departments are vigorously seeking more l.c.l. business.

Recent Developments

L.C.L. always has accounted for a disproportionate amount of loss and damage, as compared, tonnage-wise, to carload freight. Stations department men are enthusiastic about mechanical handling methods as a loss-and-damage prevention measure, for the very simple reason that each time a manual handling is eliminated one more chance of damage to the freight has been done away with. The Santa Fe, for example, attributes to mechanical handling a large part of its success in decreasing loss and damage to l.c.l. The Southern Pacific, Pennsylvania and Union Pacific are other roads which are convinced that without this equipment damage claims would have been considerably heavier. One road has conclusive proof that the proportion of claim payments due to loss and damage of l.c.l.—usually about 35 per cent of the total—is on the down grade, and attributes a great deal of this favorable result to mechanical handling. Any reduction of claims raises labor productivity in dollars and cents. Thus,



MINIMUM MAN-HOURS

mechanical handling in several ways is making a contribution to the economy of railroad operations.

The direction in which mechanization is taking the railroads seems to be toward unit-load handling. Practically all major roads are using pallets at one or more stations. More frequently than not these pallets are used only to get freight from truck tailgate to the freight cars, and vice versa. The main advantage of this method, of course, comes from moving "more at one time" than would be possible with hand trucking methods, and generally it is moved faster.

Some railroads, however, use pallets across the station platform and on to destination. The Santa Fe, Northern Pacific, Seaboard Air Line and Southern Pacific all let freight go through to final terminal on pallets furnished by the railroad, especially if the freight is heavy or if a fairly large shipment can be placed on one or more pallets. Also, both the New Haven and the Boston & Maine are now palletizing freight destined to certain on-line stations. The New Haven's experiment is built around shipping between three stations, Cedar Hill, Conn., and Bridgeport, and Harlem River Transfer, N. Y. The B. & M.'s work is being done at Boston and a dozen other stations on its line, including the transfer at Mechanicville, N. Y.

Containers Used Frequently

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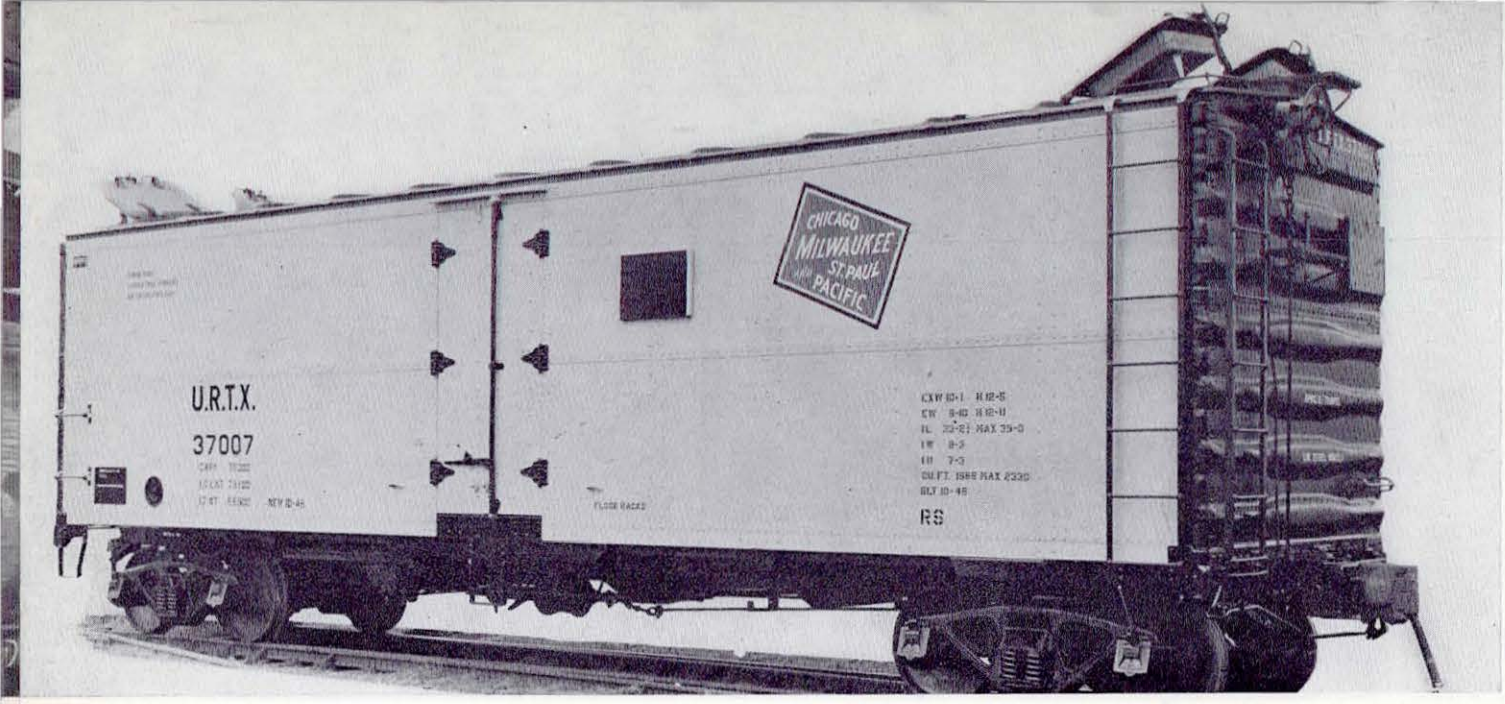
The advantages of further mechanization of freight stations are generally recognized. But aside from a lack of funds with which to accomplish all the desirable changes, which would, necessarily, include rebuilding many stations whose present layouts and construction do not permit heavy use of industrial trucks, there are other factors delaying further mechanization. One has been the uncertainty of some railroads as to what they could do to insure a large and steady volume of l.c.l., for mechanization of course brings the best results where a large and regular volume of freight is available. Another important reason why more stations are not mechanized is the reluctance of some shippers to spend money for mechanical handling equipment, including pallets. Unit-load shipments by manufacturers would speed up mechanization of freight stations in many localities. There are numerous reasons for shippers to go slow in adopting these methods, one of which is the question of rates on pallets. Also, many contract draymen make an additional charge for hauling pallets to and from freight stations, and in many cases this prohibits movement of palletized freight from shipper to originating station.

It has been suggested that more shippers would palletize l.c.l. freight if the railroads would keep close track of their pallets and guarantee their return. Canada Steamship Lines not only hauls the shippers' pallets back free, but has obtained permission to use them for palletizing general freight on the return movement. Opportunities exist for something of this sort to be worked out to profit both carrier and shipper.



are not only narrow, but too low for the use of trucks without considerable inconvenience.

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Trends toward the improved riding of freight-car trucks are reducing the incidence of damages as well as providing equipment capable of moving on faster schedules.

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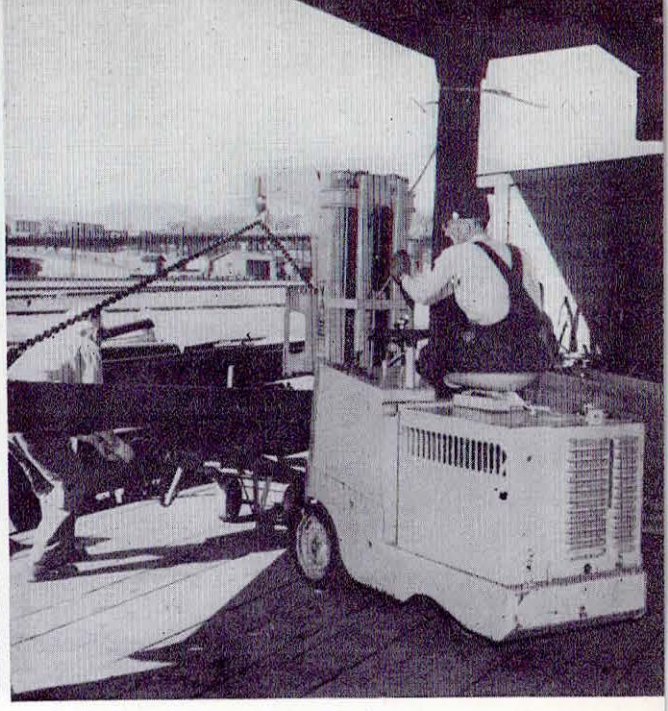
New materials which have become available during the past 15 years, associated with new construction techniques, have demonstrated their value in freight-car construction by saving weight or reducing maintenance or both. Mechanization of loading and the growth of bulk shipments have created new requirements which have to be met by freight cars if the railroads expect to satisfy their customers. The growing demand for overnight deliveries over greater distances is increasing the number of freight trains which are operating at speeds that a few years ago were considered respectable for passenger service.

As yet few roads are willing to buy superior cars if their first cost is higher than that of cars which duplicate those now growing obsolete. To do so is to invest capital from which they realize considerably less than the full return on the investment when the cars are away from home.

That such a situation is unhealthy no one can deny. How can it be corrected? There are impatient individuals who would have the government undertake to finance the purchase of freight cars. No railroad officer who takes pride in the accomplishments of his industry as a group of private enterprises will look with favor on letting that camel put his head in the tent. Neither can he continue indefinitely to take a negative attitude toward the problem, because the public expects to get improved service.

One suggestion which is a subject of some discussion at present calls for establishing a graduated scale of per diem rates based on the cost of the car. This is in keeping with suggestions from several sources that depreciation be changed from a rate calculated only to restore the dollar value of the old unit to a rate to provide the necessary dollars with which to replace the unit at present prices. Such a scheme has reason behind it in a situation of transition such as that prevailing now when stability is conspicuous by its absence



MINIMUM MAN-HOURS

mechanical handling in several ways is making a contribution to the economy of railroad operations.

The direction in which mechanization is taking the railroads seems to be toward unit-load handling. Practically all major roads are using pallets at one or more stations. More frequently than not these pallets are used only to get freight from truck tailgate to the freight cars, and vice versa. The main advantage of this method, of course, comes from moving "more at one time" than would be possible with hand trucking methods, and generally it is moved faster.

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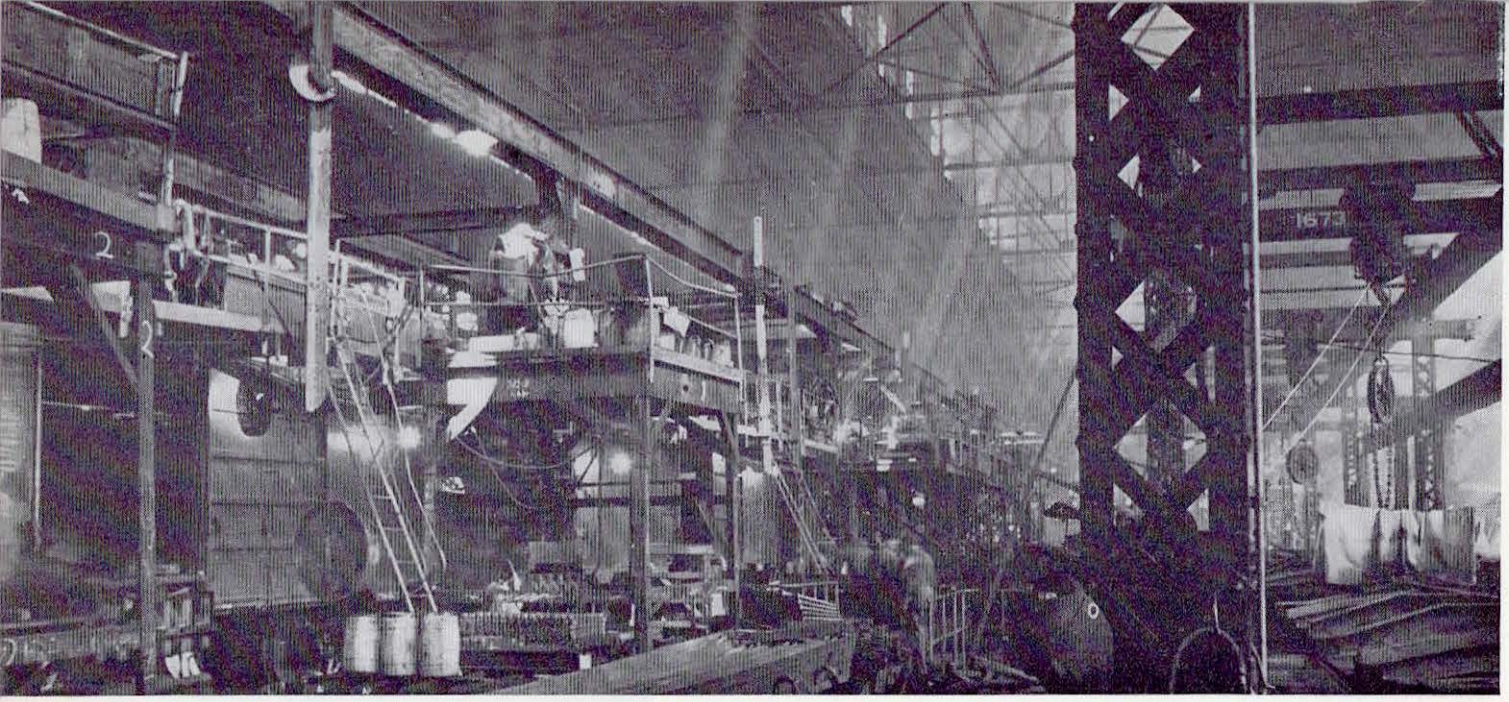


Photo by Torkel Korling

Freight-Car Improvements Stalled

Reduction in traffic has dried up orders for new cars—Low per diem and sharp price increases remove incentive to improve freight-car quality

Since the end of 1948 a sharp change has taken place in the pressure for new freight cars for the railways in the United States. This was caused by the reduction in carloadings during the first quarter of 1949 as compared with the loadings during the first quarters of the preceding two years. Total loadings were 15 per cent lower than two years ago and nearly 9 per cent lower than a year ago. Compared with two years ago, forest products loadings were down 27 per cent; merchandise l.c.l., over 22 per cent, and coal, nearly 25 per cent. Only coke and ore loadings were higher this year than in 1947.

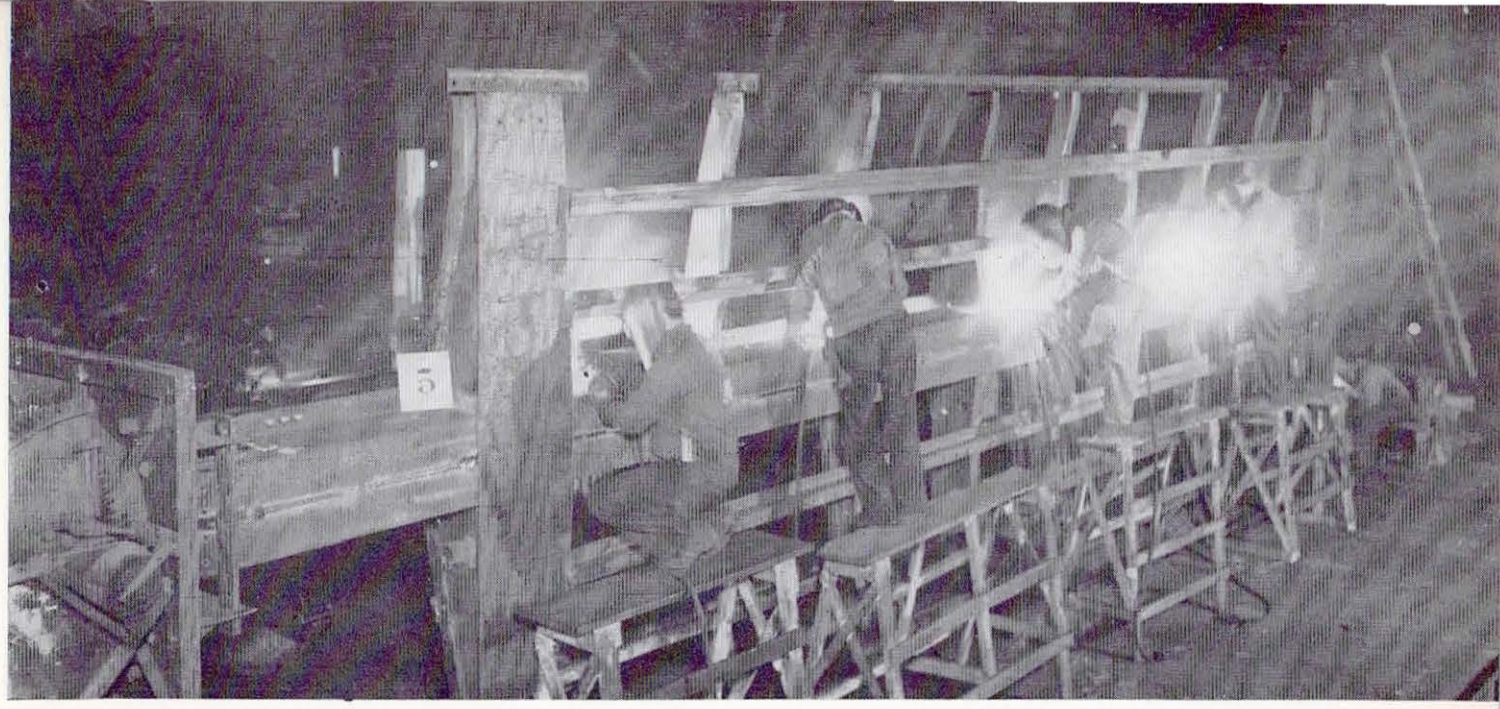
The relief which this change has effected in the pressure on the car supply is reflected in the change in surpluses and shortages. During the period from January 1 to the beginning of April the maximum and minimum shortages of all freight cars were 36,930 and 16,290, respectively, in 1947; 14,465 and 1,305, respectively, in 1948, and 885 and 207, respectively, in 1949. The significance of these figures is repeated substantially in those for both box and open-top cars. Conversely, from a maximum of 3,915 and a minimum of 2,589, in 1947, surpluses have increased to a maximum of 187,911 and a minimum of 27,578 during the first quarter of 1949.

What the railways did about it is clearly shown by the trend of freight-car orders. In January, orders for 1,568 cars were placed with railway shops and contract car builders; during February, March, and April, the orders numbered 332, 469 and 30, respectively. With deliveries averaging better than 10,000 cars a month for January to April, inclusive, the backlog of unfilled freight-car orders has declined from 103,896 on January 1, to 62,569 on May 1. This, according to S. M. Felton, president of the American Railway Car Institute, has cleaned out the orders on the books of several car-building plants and foretells progressive declines in car deliveries during coming months.

While the pressure for cars for loading has been reduced, the condition of the freight-car inventory is

Above—The box car production line at the Michigan City, Ind., plant of Pullman-Standard Car Manufacturing Company. Material is placed close to the assembling track. Underframes are moving toward the start of the production track at the right

Facing page—Underframe positioner which permits all welding to be done down-hand is part of a box car assembly line at Madison, Ill., plant of the American Car & Foundry Co.



still unsatisfactory. At the beginning of 1948 over half the freight-car ownership of the Class I railroads were 21 years old or older and more than 20 per cent were better than 30 and 40 years old. Of course, age alone is not a measure of obsolescence. This is determined by the suitability of the cars to meet the demands of shippers and to meet economically modern operating conditions.

During the first quarters of the past few years the percentage of home cars on home lines has been low, ranging from about 20 for box cars, 44 to 45 for gondolas, and running less than 40 for all cars. This has tended to curtail heavy repairs and, along with the prospect for early retirements of many of the older cars, has led to the performance of a large amount of patchwork repairs which, on the whole, have to be frequently repeated and are costly. Floors of box cars have suffered particularly because the floor supports on many old box cars are inadequate to hold up lift trucks now being used extensively in loading and unloading.

The maintenance situation, however, has changed from what it was during most of last year. Comparing the first quarter of 1949 with the first quarter of 1948, the percentage of home box cars on home lines has increased to well over 35 from the approximately 20 per cent of the earlier period. Hopper cars on home lines have increased from slightly over 50 to over 70 per cent, and all cars from less than 40 per cent to 52 and 53 per cent. This is reflected in a sharp increase in the number of cars undergoing or awaiting heavy repairs. From a range of about 17,000 to nearly 19,000 during the first quarter of 1948, box cars undergoing or awaiting heavy repairs have increased to over 24,000, and all cars have gone up from a range of about 54,000 to 57,000 to 62,000 to 68,000. This presages some restoration in the balance between heavy and light freight-car repairs.

There has long been a growing trend in the direction of special types of cars for limited classes of lading. The refrigerator car and the tank car are the classic examples which go a long way back in the history of rail transportation. More recent has been the development of special tank cars for a variety of ladings, particularly chemicals, which are coming into use in large quantities in a widely diversified and growing industry. Then came the covered hopper car for the shipment of finely divided dry lading in bulk, of which there are now several versions.

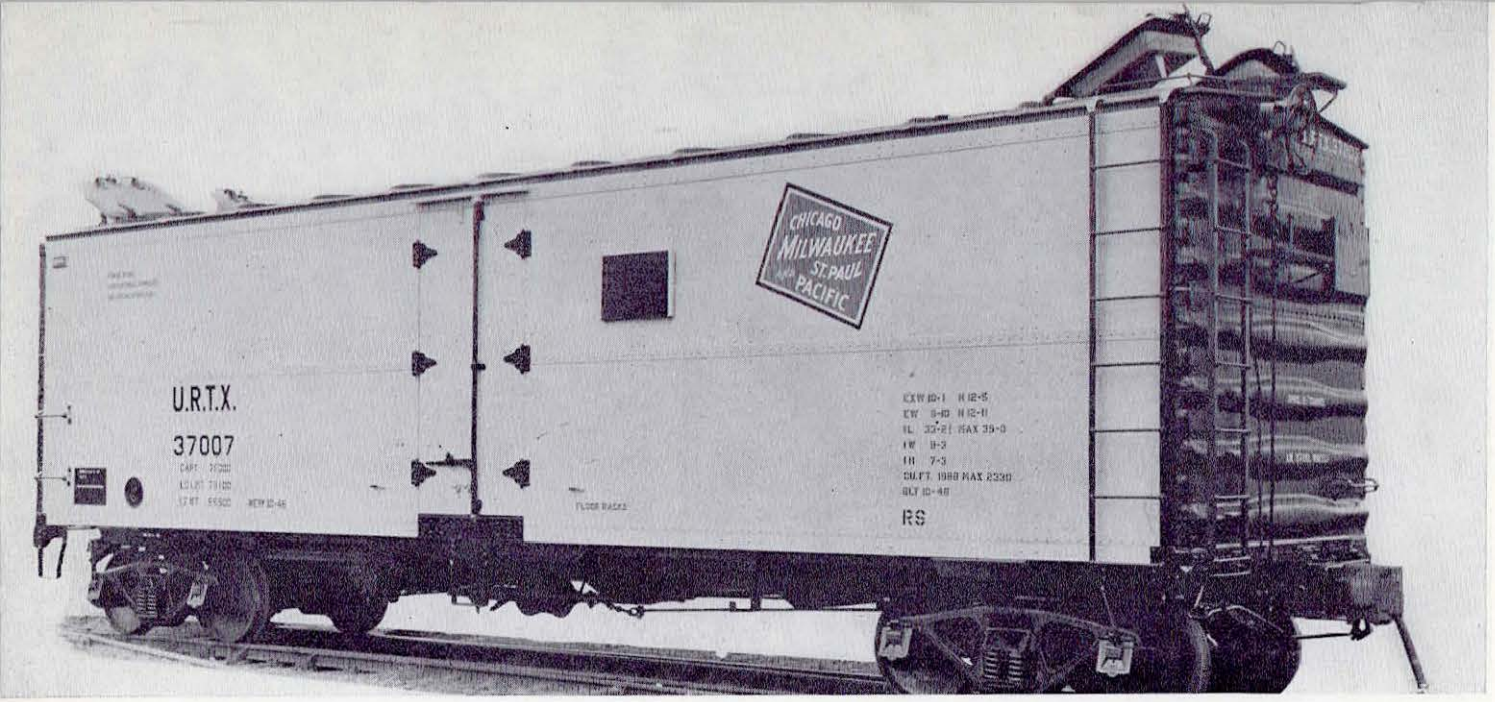
The Trend of Shippers' Needs

There has always been some conflict between the desires of shippers for specialized rolling stock and the concern of railway operating forces over the high empty car mileage likely to be produced by the specialized types of equipment, as compared with the more universally usable house and open-top cars. With growing competition between railroads and other forms of transportation, the desires of shippers weigh much more heavily in the balance than they did when railways enjoyed a transportation monopoly.

Recent trends in the handling of freight affect the long-established box car and refrigerator car. This has come about through the development of palletizing and loading with lift trucks. To provide a box-car floor of adequate strength for the use of lift trucks, more than one intermediate support is needed between the center sill and side sill. Nailable steel floors are coming into use on gondolas and flat cars. In the refrigerator car the need is for floor racks of adequate strength and of sufficiently smooth surface to provide for free rolling of the trucks.

The U. S. Navy has done considerable experimental work in the development of metal floor racks to meet both of these conditions.

Wide door openings are also a convenience in loading freight cars with lift trucks. This is particularly true with respect to refrigerator cars, the doors of which



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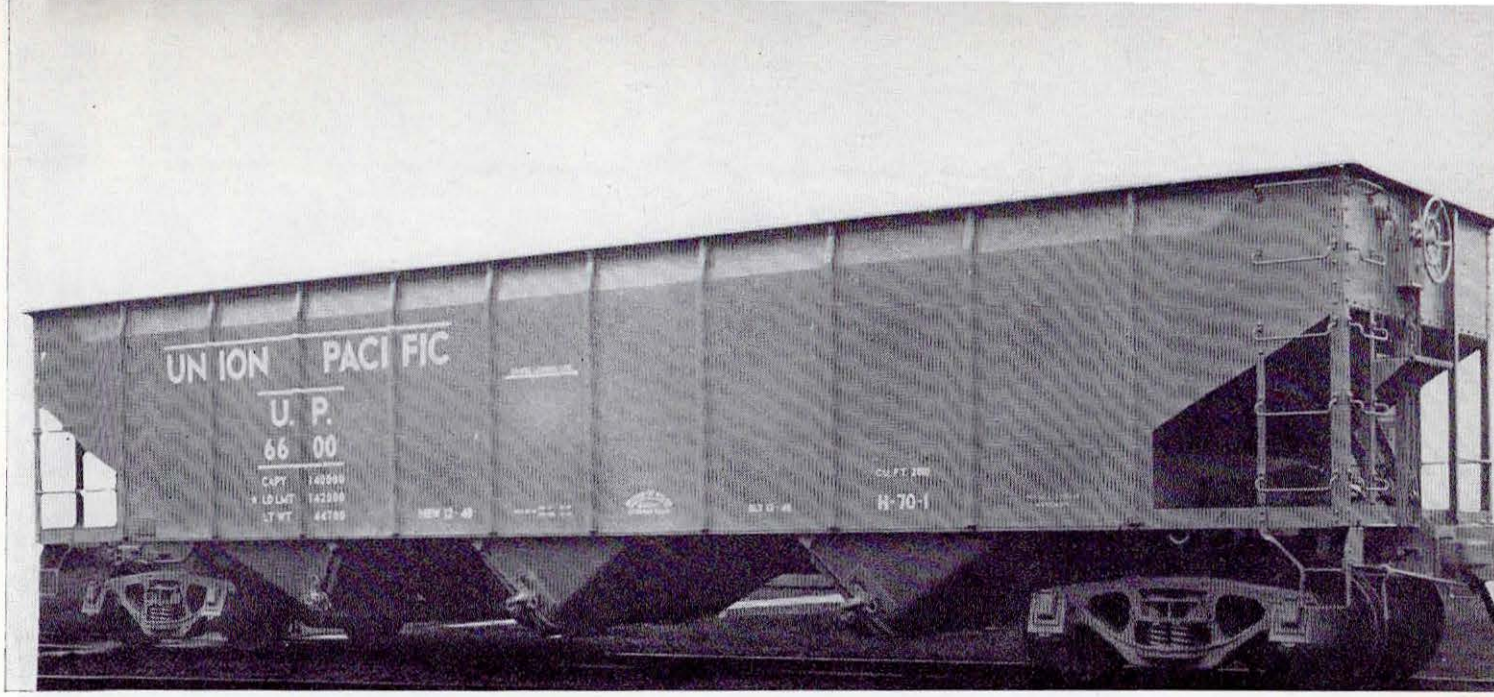


Facing page—A refrigerator car which reflects the influence of the United Fresh Fruit and Vegetable Association. Built by General American Transportation Corporation with stage icing, convertible bunkers and air circulating fans

Above—Designed and built by the Pressed Steel Car Company, using line methods, the major part of this 70-ton hopper car is of welded construction

with respect to car types, methods of loading, service requirements, and price. But the logic of the principle is one thing and the practicability of administering it is quite another.

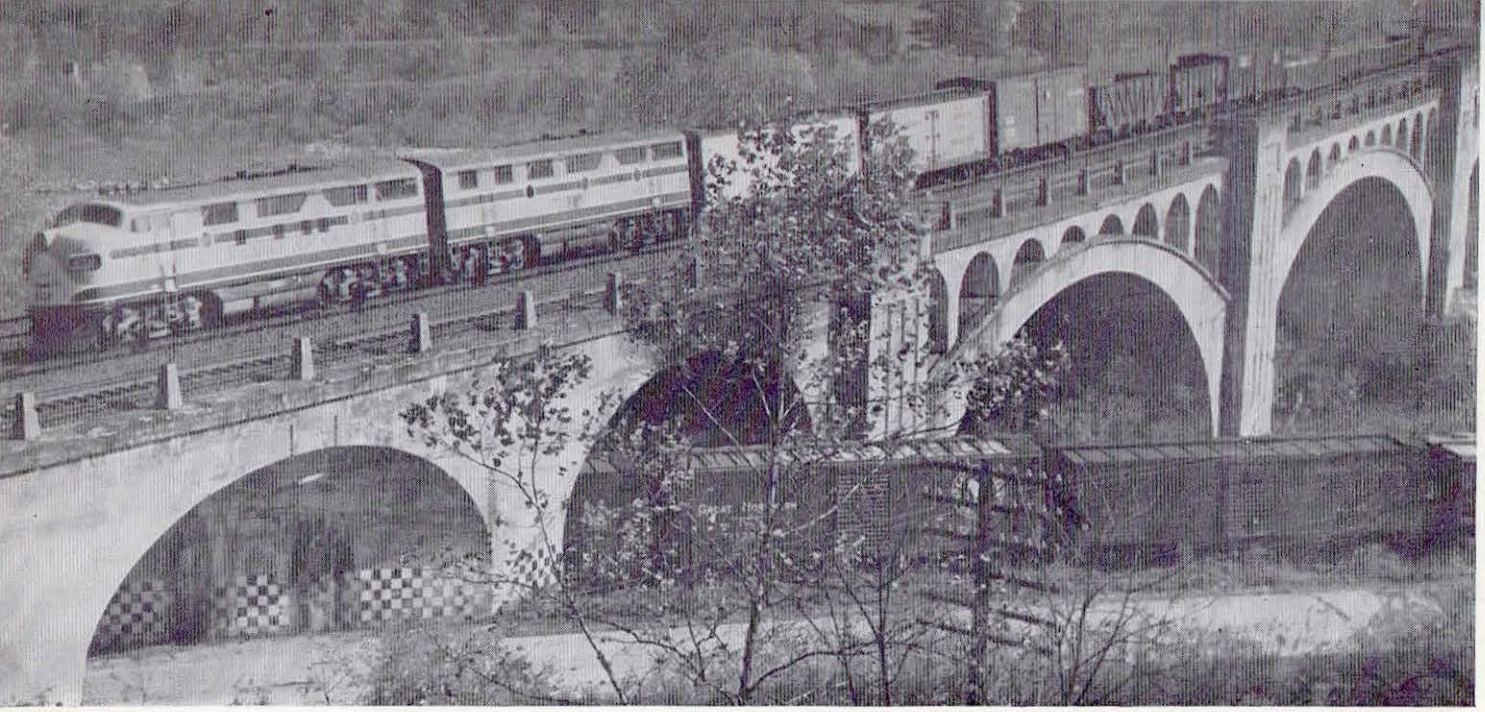
Car accounting with a single universal per diem rate is simple to administer. One fact has to be established: the presence of the foreign car, the ownership of which is discernible at a glance. A graduated scale of per diem rates adds at least one more fact which must be established; that is, the rate category in which the car belongs. Nevertheless, there is need for some means by which the owner of a car purchased at a high price, or possessing features or providing superior service or operating value for which the owner has had to pay a premium, may receive a per-diem return in keeping with his investment.

The problem offers many difficulties, but the need for a solution is pressing enough to justify the effort to find it.

FREIGHT-TRAIN CARS ON ORDER FOR DOMESTIC SERVICE MAY 1, 1949

RAILROADS

Purchaser	No.	Type	Capacity (tons)	Builder
Ann Arbor	60	Cov. Hopper	70	Pullman-Standard
Atchison, Topeka & Santa Fe	250	Hop. Bal.	70	Amer. Car & Fdy.
	417	Gondola	70	Amer. Car & Fdy.
	200	Cov. Hopper	70	Gen. American
	206	Tank	70	Gen. American
	500	Hopper	70	Pullman-Standard
	100	Caboose	..	R. R. Shops
	750	Box	50	R. R. Shops
	50	Gondola	50	R. R. Shops
	250	Cov. Hopper	70	R. R. Shops
Atlantic Coast Line	964	Hopper	50	Amer. Car & Fdy.
	894	Box	50	Amer. Car & Fdy.
	204	Pulpwood	50	Amer. Car & Fdy.
Bangor & Aroostook	100	Pulpwood	50	Magor
Cambria & Indiana	200	Hopper	50	Bethlehem Steel
Canadian Pacific	400	Box	50	Pullman-Standard
Chesapeake & Ohio	150	Caboose	30	Amer. Car & Fdy.
	144	Hopper	70	Amer. Car & Fdy.
	46	Hopper	70	Bethlehem Steel
	700	Hopper	70	Gen. American
Chicago & North Western	19	Cov. Hopper	70	Gen. American
	1,000	Box	50	Pullman-Standard
	250	Auto	50	Pullman-Standard
Chicago, Burlington & Quincy	500	Stock	40	R. R. Shops
	300	Flat	50	R. R. Shops
	200	Tank	70	R. R. Shops
	50	Gondola	70	R. R. Shops
Chicago Great Western	75	Cov. Hopper	70	Gen. American
Chicago Heights Term.	25	Cov. Hopper	70	Gen. American
Chicago, Indianapolis & Louisville	30	Box	50	Pullman-Standard
	25	Stock	..	R. R. Shops
Chicago, Milwaukee, St. Paul & Pacific	94	Cov. Hopper	70	Gen. American
	277	Box	50	R. R. Shops
	200	Gondola	50	R. R. Shops
	2,300	Gondola	..	R. R. Shops
	50	Caboose	..	R. R. Shops
	500	Flat	..	R. R. Shops
	30	Gondola	..	R. R. Shops
	200	Logging	..	R. R. Shops
Chicago, Rock Island & Pacific	500	Tr. Hopper	70	Amer. Car & Fdy.
	30	Cov. Hopper	70	Pullman-Standard
	100	Gondola	50	R. R. Shops
	1,000	Gondola	70	R. R. Shops
Chicago South Shore & South Bend	4	Cov. Hopper	70	Gen. American
Clinchfield	362	Hopper	50	Amer. Car & Fdy.
	35	Cov. Hopper	70	Amer. Car & Fdy.
Cornwall	30	Ore	75	Bethlehem Steel
Delaware & Hudson	20	Air Dump	50	Magor
	300	Box	50	R. R. Shops
	164	Gondola	50	R. R. S ops
Delaware, Lackawanna & Western	100	Cov. Hopper	70	Amer. Car & Fdy.
	500	Hopper	50	Amer. Car & Fdy.
	300	Box	50	Magor
Denver & Rio Grande Western	50	Gondola	70	Bethlehem Steel
	303	Gondola	50	Pressed Steel
	25	Cov. Hopper	70	Pullman-Standard
	200	Gondola	70	Pullman-Standard
Detroit & Toledo Shore Line	125	Cov. Hopper	70	Greenville
Detroit, Toledo & Ironton	100	Box	50	Amer. Car & Fdy.
	100	Cov. Hopper	70	Amer. Car & Fdy.
	3	Caboose	40	Intl. Ry. Car
	10	Air Dump	50	Magor
Duluth, South Shore & Atlantic	67	Gondola	50	Pullman-Standard



YEAR-ROUND AVAILABILITY

Purchaser	No.	Type	Capacity (tons)	Builder
Erie	97	Box	50	Amer. Car & Fdy.
Escanaba & Lake Superior	5	Gondola	50	Pullman-Standard
	5	Hopper	50	Pullman-Standard
Grand Trunk Western	500	Box	50	Amer. Car & Fdy.
Great Northern	75	Cov. Hopper	70	Amer. Car & Fdy.
	200	Gondola	50	Amer. Car & Fdy.
	500	Gondola	50	Pullman-Standard
	1,500	Box	50	R. R. Shops
Green Bay & Western	20	Hopper	50	Pullman-Standard
Gulf, Mobile & Ohio	500	Gondola	50	Amer. Car & Fdy.
	500	Hopper	50	Pullman-Standard
Illinois Central	1,750	Hopper	50	Gen. American
	100	Cov. Hopper	70	Gen. American
	248	Hopper	50	Pressed Steel
	441	Hopper	50	Pullman-Standard
	1,561	Hopper	50	R. R. Shops
	375	Flat	50	R. R. Shops
Kansas City Southern	100	Cov. Hopper	70	Gen. American
Louisville & Nashville	419	Hopper	50	Pullman-Standard
Minn., St. Paul & S. Ste. Marie	15	Cov. Hopper	70	Gen. American
	142	Gondola	50	R. R. Shops
	500	Box	50	R. R. Shops
	50	Auto	40	R. R. Shops
Mississippi Central	100	Box	50	Pullman-Standard
Missouri-Illinois	100	Hopper	70	R. R. Shops
Missouri-Kansas-Texas	500	Hopper	70	Pressed Steel
	25	Caboose	..	R. R. Shops
Missouri Pacific	1,000	Hopper	70	Bethlehem Steel
	381	Gondola	70	R. R. Shops
	1,100	Hopper	70	R. R. Shops
Monongahela Connecting	220	Gondola	70	Amer. Car & Fdy.
Monongahela	10	Caboose	..	Intern'l Ry. Car
Nash., Chatt. & St. L.	500	Hopper	50	Pullman-Standard
New York Central	500	Hopper	50	Amer. Car & Fdy.
	400	Gondola	70	Bethlehem
	500	Flat	70	Gen. American
	600	Gondola	70	Greenville
	650	Hopper	55	Pressed Steel
	200	Cov. Hopper	70	Pullman-Standard
	500	Gondola	70	Pullman-Standard
	2,000	Hopper	55	R. R. Shops
	100	Caboose	40	R. R. Shops
	500	Gondola	70	R. R. Shops
Norfolk & Western	10	Caboose	30	St. Louis Car
	394	Hopper	70	Virginia Br.
	25	Gondola	70	Virginia Br.
	1,000	Hopper	70	R. R. Shops
Northern Pacific	250	Ballast	70	Amer. Car & Fdy.
	70	Tank	70	Gen. American
	250	Refrig.	40	Pacific Car & Fdy.
	500	Hopper	70	Pressed Steel
	250	Gondola	50	R. R. Shops
	750	Box	50	R. R. Shops
	200	Ore	75	R. R. Shops
Pennsylvania	2,601	Gondola	70	R. R. Shops
	200	Caboose	..	R. R. Shops
Pittsburgh & Lake Erie	500	Gondola	70	R. R. Shops
Reading	750	Hopper	50	Bethlehem Steel
St. Louis-San Francisco	130	Tank	50	Amer. Car & Fdy
	800	Hopper	55	Pullman-Standard
	316	Gondola	70	Pullman-Standard
St. Louis Southwestern	50	Cov. Hopper	70	Amer. Car & Fdy.
South Buffalo	50	Hopper	50	Bethlehem Steel
Southern Pacific	350	Cov. Hopper	70	Amer. Car & Fdy
	2,050	Flat	70	Amer. Car & Fdy
	600	Flat	50	Amer. Car & Fdy
	700	Gondola	50	Amer. Car & Fdy
	1,000	Gondola	50	Gen. American
	24	Caboose	30	R. R. Shops
Spokane, Portland & Seattle	500	Box	..	R. R. Shops
	100	Gondola	50	Pullman-Standard
Term. R. R. of St. Louis	4	Caboose	30	Intern'l Ry. Car
Union Pacific	257	Hopper	70	Pressed Steel
Virginian	81	Hopper	50	Pressed Steel
	25	Caboose	30	St. Louis Car
	500	Hopper	55	R. R. Shops
Wabash	223	Hopper	50	R. R. Shops
	600	Box	50	R. R. Shops
Western Maryland	386	Hopper	55	Bethlehem Steel
	24	Auto	50	Greenville
Western Pacific	250	Gondola	70	Greenville
Wheeling & Lake Erie	228	Gondola	70	Amer. Car & Fdy.
Wisconsin Central	20	Cov. Hopper	70	Gen. American

PRIVATE CAR LINES

Cudahy Packing	133	Refrig.	40	Co. Shops
Fruit Growers Express	250	Refrig.	40	Pacific Car & Fdy.
	1,121	Refrig.	40	Co. Shops
Mather Stock	119	Refrig.	40	Co. Shops
Merchants Despatch	60	Dry Ice	55	R. R. Shops
Pacific Fruit Express	1,999	Refrig.	40	Co. Shops
St. Louis Refrigerator	100	Refrig.	40	Co. Shops
Union Tank Car	294	Tank	50	Co. Shops
	100	Tank	50	Co. Shops
Wilson	92	Refrig.	40	Co. Shops
Various	4	M. U.	40	Amer. Car & Fdy.
	1	Hopper	50	Amer. Car & Fdy.
	50	Cov. Hopper	..	Amer. Car & Fdy.
	50	Box	70	Amer. Car & Fdy.
	2,102	Tank	..	Amer. Car & Fdy.
	18	Gondola	70	Bethlehem Steel
	18	Ore	75	Bethlehem Steel
	25	Hopper	55	Bethlehem Steel
	5	Tank	..	Chicago Frt. Car
	11	Cov. Hopper	70	Gen. American
	50	Refrig.	40	Gen. American
	1,301	Tank	..	Gen. American
	51	Flat	..	Greenville
	74	Air Dump	..	Magor
	18	Hopper	70	Pressed Steel
	10	Hopper	50	Pullman-Standard
	8	Gondola	50	Pullman-Standard
	35	Cov. Hopper	50	Pullman-Standard
	50	Box	50	Pullman-Standard
	500	Box	50	Pullman-Standard
	4	Gondola	70	Ralston
	11	Other	..	St. Louis Car
	10	Flat	50	Thrall Car

MANY STATIONS CAN HANDLE UNIT LOADS

This year the list of stations at which the railroads of the United States and Canada have installed equipment for handling unit loads of freight reaches above the 650 mark, an increase of about 37 per cent since a similar list was first published in the 1948 Freight Progress Number of *Railway Age*. Only two states of the union are still without at least one station at which unit loads can be handled by mechanized facilities.

Mechanization of freight stations, including the installation of unit-load handling equipment, has made great strides since the end of the war. The railroads recognize, however, that much remains to be done. The Pennsylvania, for example, according to testimony before the Interstate Commerce Commission in the pending general rate case (Ex Parte 168) has mechanized only about 25 per cent of the stations at which such equipment could be employed to advantage, with a reduction in handling costs. Further installations will be made, the testimony indicated, as fast as earnings will permit. Other railroads find themselves in much the same position as the Pennsylvania. Only a severely decreased volume of l.c.l. business is likely to hold up this march of progress.

ALABAMA

Station	Railroad	Max. Capy. Lb.
Birmingham	St. L.-S. F.	
	Sou.	2,000
Florence	Sou.	
Mobile	G. M. & O.	5,000
Montgomery	A. & W. P.	

ARIZONA

Phoenix	A. T. & S. F.	4,000
	S. P.	4,000
Tucson	S. P.	4,000
Winslow	A. T. & S. F.	4,000

ARKANSAS

Fort Smith	M. P.	4,000
Jonesboro	St. L. S. W. (p)	4,000
Little Rock	C. R. I. & P.	2,000
	M. P.	6,000
Pine Bluffs	St. L. S. W.	2,000
Stuttgart	St. L. S. W. (p)	4,000
Texarkana	St. L. S. W. (p)	4,000

(p) Denotes platform trucks

CALIFORNIA

Station	Railroad	Max. Capy. Lb.
Auburn	S. P.	4,000
Bakersfield	S. P.	4,000
	A. T. & S. F.	4,000
Barstow	A. T. & S. F.	4,000
Berkeley	S. P.	
Chico	S. P.	
Emeryville	S. P.	
Eureka	Nw. P	4,000
Fernbridge	Nw. P.	4,000
Fresno	S. P.	4,000
	A. T. & S. F.	4,000
Los Angeles	S. P.	4,000
	A. T. & S. F.	4,000
	U. P.	
Marysville	W. P.	4,000
	S. P.	
Modesto	S. P.	4,000
Oakland	S. P.	4,000
	W. P.	4,000
Placerville	S. P.	4,000
Red Bluff	S. P.	
Sacramento	W. P.	4,000
	S. P.	4,000
San Diego	A. T. & S. F.	4,000

CALIFORNIA (Cont.)

Station	Railroad	Max. Capy. Lb.
San Francisco	A. T. & S. F.	4,000
	W. P.	4,000
	S. P.	4,000
San Jose	S. P.	4,000
	W. P.	4,000
San Rafael	Nw. P.	4,000
Stockton	A. T. & S. F.	4,000
	S. P.	4,000
	W. P.	4,000
Suisun-Fairfield	S. P.	4,000
Tracy	S. P.	4,000
Ukiah	Nw. P.	4,000
Willets	Nw. P.	4,000

COLORADO

Denver	C. R. I. & P.	
	U. P.	
	A. T. & S. F.	4,000
	C. B. & Q.	4,000
	D. & R. G. W.	4,000
La Junta	A. T. & S. F.	4,000
Pueblo	A. T. & S. F.	4,000
	D. & R. G. W.	4,000

DOOR-TO-DOOR SERVICE

CONNECTICUT

Station	Railroad	Max. Capy. Lb.
Bridgeport	N. Y. N. H. & H.	4,000
Cedar Hill Tfr.	N. Y. N. H. & H.	4,000

DELAWARE

Wilmington	P. R. R.	

DISTRICT OF COLUMBIA

Washington	P. R. R.	
	B. & O.	6,000

FLORIDA

Fort Lauderdale	S. A. L. (p)	4,000
Gainesville	S. A. L. (p)	4,000
Jacksonville	S. A. L.	
Miami	F. E. C.	4,000
	S. A. L.	
St. Petersburg	S. A. L. (p)	2,000
Tampa	S. A. L. (p)	6,000

GEORGIA

Athens	S. A. L. (p)	2,000
Atlanta	A. & W. P.	
	C. of Ga. (p)	4,000
	Sou.	2,000
Augusta	A. & W. P.	
Columbus	C. of Ga. (p)	4,000
Macon	C. of Ga. (p)	4,000
Savannah (Piers)	C. of Ga.	6,000
	S. A. L.	
	A. C. L.	5,000
Waycross Tfr.	A. C. L.	2,000

IDAHO

Boise	U. P.	
Pocatello	U. P.	

ILLINOIS

Bloomington	N. Y. C.	4,000
Champaign	N. Y. C.	4,000
Chicago (Corwith)	A. T. & S. F.	4,000
	C. & O.	4,000
	C. & E. I.	8,000
	C. B. & Q.	5,000
	Erie (p)	5,000
	G. M. & O.	5,000
(Polk St.)	P. R. R.	
(Halsted St.)	P. R. R.	
(16th St.)	C. & N. W.	4,000
	C. R. I. & P.	4,000
	Wab.	6,000
	I. C.	4,000
(Polk St.)	N. Y. C.	6,000
	C. M. St. P. & P.	
	G. T. W.	
	N. Y. C. & St. L.	4,000

(p) Denotes platform trucks

ILLINOIS (Cont.)

Station	Railroad	Max. Capy. Lb.
Danville	N. Y. C.	4,000
Decatur	Wab.	6,000
East St. Louis	B. & O.	4,000
	G. M. & O.	5,000
	I. C.	4,000
	P. R. R.	
	Wab.	6,000
	N. Y. C.	4,000
	N. Y. C. & St. L.	
Eldorado	N. Y. C.	4,000
Galesburg	C. B. & Q.	4,000
Harrisburg	N. Y. C.	4,000
Joliet	A. T. & S. F.	4,000
Kankakee	N. Y. C. (p)	4,000
Mattoon	N. Y. C.	4,000
Moline	C. B. & Q.	4,000
Morrison	C. & N. W.	2,000
Mt. Carmel	N. Y. C.	4,000
Paris	N. Y. C.	4,000
Quincy	C. B. & Q.	4,000
Rock Island	C. R. I. & P.	2,000
Rockford	I. C.	4,000
Shelbyville	N. Y. C.	4,000
Streator	A. T. & S. F.	4,000

INDIANA

Anderson	P. R. R.	
	N. Y. C.	4,000
Batesville	N. Y. C.	4,000
Columbus	N. Y. C.	4,000
Connersville	N. Y. C.	4,000
Crawfordsville	N. Y. C.	4,000
Elkhart	N. Y. C. (p)	4,000
Evansville	C. & E. I.	8,000
Fort Wayne	P. R. R.	
	N. Y. C.	4,000
	N. Y. C. & St. L.	
Gibson	N. Y. C.	4,000
Goshen	N. Y. C.	4,000
Greensburg	N. Y. C.	4,000
Indianapolis	P. R. R.	
	N. Y. C.	4,000
	B. & O.	6,000
Jeffersonville	P. R. R.	
	N. Y. C.	4,000
Kokomo	P. R. R.	
LaPorte	N. Y. C. (p)	4,000
Lafayette	N. Y. C.	4,000
Lawrenceburg	N. Y. C.	4,000
Logansport	P. R. R.	
Marion	N. Y. C.	4,000
Mishawaka	G. T. W.	4,000
	N. Y. C.	4,000
Muncie	N. Y. C.	4,000
New Castle	N. Y. C.	4,000
Shelbyville	N. Y. C.	4,000
South Bend	P. R. R.	
	G. T. W.	4,000
	N. Y. C.	4,000

INDIANA (Cont.)

Station	Railroad	Max. Capy. Lb.
Terre Haute	N. Y. C.	4,000
Wabash	N. Y. C.	4,000
Winchester	N. Y. C.	4,000

IOWA

Cedar Rapids	C. R. I. & P.	4,000
Davenport	C. R. I. & P.	2,000
Des Moines	C. R. I. & P.	2,000
Fort Madison	A. T. & S. F.	4,000
Sioux City	G. N. (p)	4,000

KANSAS

Atchison	A. T. & S. F.	4,000
	M. P.	6,000
Dodge City	A. T. & S. F.	4,000
Emporia	A. T. & S. F.	4,000
Garden City	A. T. & S. F.	4,000
Hutchinson	A. T. & S. F.	4,000
Kansas City	St. L.-S. F.	
Newton	A. T. & S. F.	4,000
Salina	U. P.	
Topeka	A. T. & S. F.	4,000
Wichita	A. T. & S. F.	4,000
	M. P.	4,000

KENTUCKY

Louisville	B. & O. (p)	5,000
	P. R. R.	
	N. Y. C.	4,000

LOUISIANA

Alexandria	M. P.	6,000
New Orleans		
(Piers)	I. C.	4,000
(Freight Sta.)	I. C.	2,000
(Piers)	L. & N.	4,000
	K. C. S.-L. & A.	4,000
	Sou.	2,000
	T. & P.	4,000
Shreveport	K. C. S.-L. & A.	10,000
	T. & P.	2,000
	St. L.S. W. (p)	4,000

MARYLAND

Baltimore		
(Camden Sta.)	B. & O.	6,000
(Canton Sta. Lgts.)	P. R. R.	
(President Sta.)	P. R. R.	
Cumberland	B. & O.	6,000
Hagerstown	P. R. R.	
Locust Point	B. & O.	6,000
Port Covington Term.	W. M.	6,500

MASSACHUSETTS

Boston (Kneeland St.)	N. Y. C. (B. & A.)	6,000
(Piers)	N. Y. N. H. & H.	4,000
	B. & M.	4,000
Chelsea	B. & M.	2,000
East Cambridge	N. Y. C. (B. & A.)	4,000
Everett	B. & M.	2,000

MASSACHUSETTS (Cont.)

Station	Railroad	Max. Capy. Lb.
Gloucester	B. & M.	2,000
Holyoke	B. & M.	2,000
Ipswich	B. & M.	2,000
Lynn	B. & M.	2,000
Lawrence	B. & M.	2,000
Malden	B. & M.	2,000
Palmer	N. Y. C. (B. & A.) (p)	4,000
Pittsfield	N. Y. C. (B. & A.) (p)	4,000
Salem	B. & M.	2,000
Springfield	N. Y. C. (B. & A.)	4,000
Waltham	B. & M.	2,000
Watertown	B. & M.	2,000
Worcester	N. Y. C. (B. & A.)	4,000

MICHIGAN

Adrian	N. Y. C.	4,000
Alma	C. & O. (P. M.)	6,000
Ann Arbor	N. Y. C. (p)	4,000
Battle Creek	N. Y. C.	3,500
	G. T. W.	4,000
Bay City	N. Y. C.	4,000
Big Rapids	P. R. R.	
Cadillac	P. R. R.	
Detroit	C. & O. (P. M.)	6,000
	Wab.	6,000
	P. R. R.	
	N. Y. C.	6,000
	G. T. W.	4,000
Durand	G. T. W.	4,000
Flint	C. & O. (P. M.)	6,000
	G. T. W.	4,000
Grand Rapids	C. & O. (P. M.)	6,000
	P. R. R.	
	G. T. W.	4,000
	N. Y. C.	4,000
Hillsdale	N. Y. C. (p)	4,000
Ionia	G. T. W.	4,000
Jackson	N. Y. C.	4,000
Kalamazoo	P. R. R.	
	G. T. W.	4,000
	N. Y. C. (p)	4,000
Lansing	C. & O. (P. M.)	6,000
	G. T. W.	4,000
	N. Y. C.	4,000
Monroe	N. Y. C.	4,000
Mt. Clemens	G. T. W.	4,000
Muskegon	C. & O. (P. M.)	6,000
	G. T. W.	4,000
Niles	N. Y. C.	4,000
Owosso	G. T. W.	4,000
	N. Y. C.	4,000
Petoskey	P. R. R.	
Port Huron	G. T. W.	4,000
Saginaw	C. & O. (P. M.)	6,000
	G. T. W.	4,000
	N. Y. C.	4,000
St. John's	G. T. W.	4,000
Sturgis	P. R. R.	
	N. Y. C. (p)	4,000
Traverse City	P. R. R.	
Wyandotte	N. Y. C.	4,000

(p) Denotes platform trucks

MINNESOTA

Station	Railroad	Max. Capy. Lb.
Duluth	N. P.	4,000
Minneapolis	N. P.	4,000
	G. N.	2,000
	C. R. I. & P.	2,000
	C. M. St. P. & P.	
St. Cloud	G. N.	2,000
St. Paul	G. N.	2,000
	N. P.	4,000
	C. M. St. P. & P.	2,000
	C. R. I. & P.	2,000
Willmar	G. N. (p)	4,000

MISSISSIPPI

Artesia	G. M. & O. (p)	2,500
Jackson	I. C.	2,000
Meridian	G. M. & O. (p)	8,000

MISSOURI

Jefferson City	M. P.	6,000
Joplin	St. L.-S. F.	
Kansas City	A. T. & S. F.	4,000
	C. R. I. & P.	4,000
	M. P.	6,000
	U. P.	
	C. B. & Q.	5,000
	St. L.-S. F.	
	Wab.	6,000
St. Joseph	C. B. & Q.	4,000
St. Louis (Broadway)	C. & E. I.	8,000
	C. B. & Q.	5,000
	Ill. Term. (p)	
(3 stations)	M. P.	4,000
	St. L.-S. W.	5,000
(Broadway)	St. L.-S. F.	
	Wab.	6,000
Springfield (Till St.)	St. L.-S. F.	
(Chase St.)	St. L.-S. F.	

MONTANA

Billings	N. P.	4,000
Butte	N. P.	4,000
Great Falls	G. N.	2,000
Harlowton	C. M. St. P. & P.	
Havre	G. N.	2,000
Helena	N. P.	4,000
Missoula	N. P.	4,000

NEBRASKA

Grand Island	U. P.	
Lincoln	U. P.	
	C. B. & Q.	4,000
North Platte	U. P.	
Omaha	C. B. & Q.	5,000
	U. P.	
	C. R. I. & P.	2,000
	M. P.	4,000

NEVADA

Las Vegas	U. P.	
Reno	S. P.	4,000

NEW JERSEY

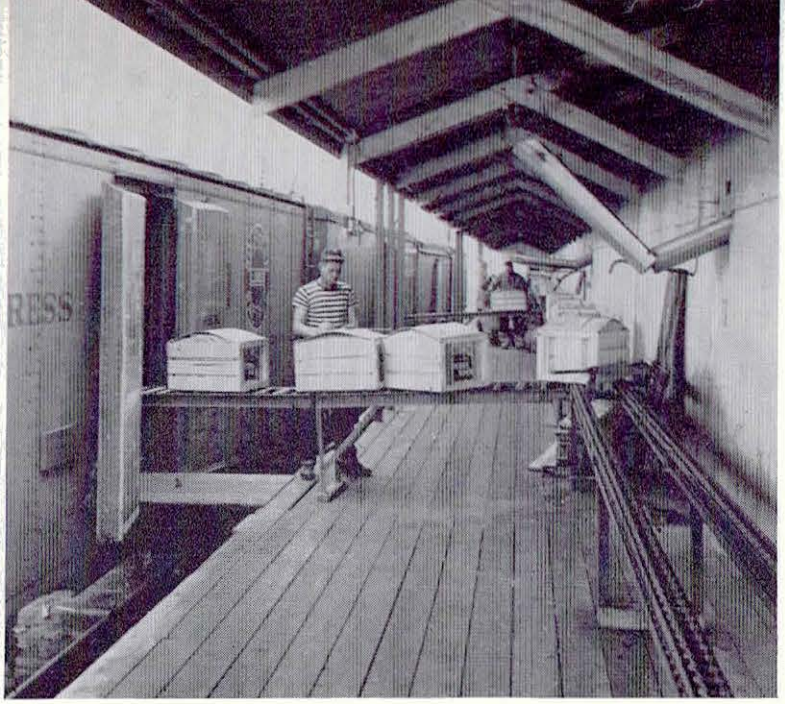
Station	Railroad	Max. Capy. Lb.
Camden	P. R. R.	
Croxton Tfr.	Erie	5,000
Greenville Piers	P. R. R.	
Hoboken (City)	D. L. & W.	4,000
(Term. Piers)	D. L. & W.	4,000
Jersey City Piers	P. R. R.	
(B, C, E, G, I and Claremont Term.)	L. V.	6,000
Jersey City	Erie	5,000
	N. Y. C.	4,000
Newark	D. L. & W.	
	P. R. R.	
New Brunswick	P. R. R.	
Passaic	D. L. & W.	
Trenton	P. R. R.	
	Rdg.	6,000
Weehawken Piers	Erie	4,000
	N. Y. C.	6,000

NEW MEXICO

Albuquerque	A. T. & S. F.	4,000
Clovis	A. T. & S. F.	4,000
Las Vegas	A. T. & S. F.	4,000
Santa Fe	A. T. & S. F.	4,000

NEW YORK

Albany	D. & H.	6,000
Auburn	N. Y. C.	4,000
Batavia	N. Y. C.	4,000
Binghamton	D. L. & W.	
	Erie (p)	4,000
Black Rock	N. Y. C.	4,000
Brooklyn (Bushwick)	L. I.	
(N. 4th St.)	P. R. R.	
Buffalo	P. R. R.	
	D. L. & W.	
	Erie (p)	5,000
	Wab.	6,000
	N. Y. C.	4,000
	L. V.	
	B. & O.	6,000
	N. Y. C. & St. L.	
Cobleskill	D. & H.	1,500
Dunkirk	N. Y. C.	4,000
Elmira	D. L. & W.	
	P. R. R.	
Fulton	D. L. & W.	
Hornell	Erie	3,500
Hudson Falls	D. & H.	3,500
Jamestown	Erie (p)	5,000
Kingston	N. Y. C.	4,000
Little Falls	N. Y. C.	4,000
Lockport	N. Y. C.	4,000
Long Island City	L. I.	
Mechanicville	D. & H.	6,000
	B. & M.	2,000
New York City		
Des. St. (Piers 27-8-9)	P. R. R.	
37th St.	P. R. R.	
Piers 49-50	P. R. R.	



FAST, FLEXIBLE TERMINAL FACILITIES

NEW YORK (Cont.)

Station	Railroad	Max. Capy* Lb.
New York City (Cont.)		
Piers 13-41-68 N. River	D. L. & W.	
Pier 26 E. River	D. L. & W.	
Pier 22	B. & O.	6,000
Pier 39	B. & O.	4,000
W. 26th St.	B. & O. (p)	5,000
Pier 48	Erie	3,500
Duane St.	Erie (p)	6,000
W. 28th St.	Erie (p)	5,000
Pier 10, N. River	C. of N. J.	4,000
Piers 8-38-66 N. River	L. V.	6,000
149th St. (Bronx)	L. V.	
Pier 44, E. River	L. V.	4,000
Term. (E. 34th St. & E. River)	L. V.	4,000
Export Piers	N. Y. N. H. & H.	4,000
Pier 34	N. Y. C.	6,000
Barclay St.	N. Y. C.	6,000
St. John's Park	N. Y. C.	6,000
33rd St.	N. Y. C.	6,000
60th St.	N. Y. C.	6,000
Niagara Falls	N. Y. C.	4,000
North Tonawanda	N. Y. C.	4,000
Olean	P. R. R.	
Peekskill	N. Y. C. (p)	4,000
Plattsburg	D. & H.	6,000
Rochester	P. R. R.	
	Erie (p)	5,000
	N. Y. C.	4,000
Rome	N. Y. C.	6,000
St. George Tfr.	B. & O.	6,000
Schenectady	N. Y. C.	4,000
Syracuse	N. Y. C.	4,000
Troy	D. & H.	6,000
Utica	N. Y. C.	3,500
Watertown	N. Y. C.	4,000
West Hempstead	L. I.	
Whitehall	D. & H.	6,000
Yonkers	N. Y. C.	4,000

NORTH CAROLINA

Durham	N. & W.	2,000
Lumberton	S. A. L. (p)	4,000
Roanoke Rapids	S. A. L. (p)	2,000
Winston-Salem	N. & W.	2,000

NORTH DAKOTA

Fargo	G. N. (p)	4,000
	N. P.	4,000
Grand Forks	G. N. (p)	4,000
Minot	G. N.	2,000

OHIO

Akron	P. R. R.	
	B. & O. (p)	6,000
	Erie (p)	5,000

OHIO (Cont.)

Station	Railroad	Max. Capy. Lb.
Alliance	P. R. R.	
	N. Y. C.	4,000
Ashtabula	N. Y. C.	4,000
Barberton	P. R. R.	
Bellefontaine	N. Y. C.	4,000
Brighton	B. & O. (p)	5,000
Canton	P. R. R.	
Carey	N. Y. C.	4,000
Chillicothe	B. & O.	3,500
Cincinnati	P. R. R.	
	C. & O.	4,000
	Sou.	2,000
	B. & O.	4,000
	N. Y. C.	4,000
Cleveland	B. & O.	4,000
	Erie	6,000
(Davenport)	P. R. R.	
(Woodland Ave.)	P. R. R.	
	N. Y. C. & St. L.	6,000
	N. Y. C.	6,000
Columbus	N. & W.	2,000
	P. R. R.	
	B. & O. (p)	5,000
	N. Y. C.	4,000
Coshocton	P. R. R.	
Dayton	B. & O. (p)	5,000
	N. Y. C.	4,000
Elyria	N. Y. C.	4,000
Franklin	N. Y. C.	4,000
Fremont	N. Y. C.	4,000
Galion	N. Y. C.	4,000
Hamilton	P. R. R.	
Ironton	N. & W.	2,000
Kenton	N. Y. C.	4,000
Lima	B. & O.	6,000
	P. R. R.	
Mansfield	P. R. R.	
Marion	N. Y. C.	4,000
Massillon	P. R. R.	
Middletown	N. Y. C.	4,000
Newark	B. & O.	2,000
New London	N. Y. C.	4,000
Painesville	N. Y. C.	4,000
Portsmouth	N. & W.	2,000
Sandusky	N. Y. C. (p)	4,000
Shelby	N. Y. C.	4,000
Sidney	N. Y. C.	4,000
Springfield	N. Y. C.	4,000
Steubenville	P. R. R.	
Tiffin	N. Y. C.	4,000
Toledo	N. Y. C. & St. L.	3,500
	P. R. R.	
	B. & O.	6,000
	N. Y. C.	6,000
	Wab.	6,000
Troy	N. Y. C.	4,000
Urbana	N. Y. C.	4,000
Warren	P. R. R.	
	Erie (p)	6,000
West Carrollton	N. Y. C.	4,000
Willoughby	N. Y. C.	4,000

OHIO (Cont.)

Station	Railroad	Max. Capy. Lb.
Youngstown	P. R. R.	
	Erie	6,000
	B. & O.	4,000
	N. Y. C.	4,000
Zanesville	P. R. R.	
	N. Y. C. (p)	4,000

OKLAHOMA

Muskogee	M.-K.-T.	2,000
Oklahoma City	A. T. & S. F.	4,000
	C. R. I. & P.	4,000
Tulsa	St. L.-S. F.	
Waynoka	A. T. & S. F.	4,000

OREGON

Portland	U. P.	
	S. P.	6,000
	S. P. & S.	4,000

PENNSYLVANIA

Altoona	P. R. R.	
Beaver Falls	P. R. R.	
	N. Y. C. (P. & L. E.) (p)	4,000
Bellefonte	P. R. R.	
Chambersburg	P. R. R.	
Coatesville	P. R. R.	
Connellsville	B. & O.	6,000
Downingtown	P. R. R.	
Economy	P. R. R.	
Erie	P. R. R.	
	N. Y. C.	4,000
Franklin	N. Y. C.	4,000
Harrisburg	P. R. R.	
Lancaster	P. R. R.	
Lebanon	P. R. R.	
	Rdg.	4,000
Lewistown	P. R. R.	
Meadville	Erie	6,000
Newberry Jct. Tfr.	Rdg.	4,000
	N. Y. C. (p)	4,000
New Castle	P. R. R.	
Oil City	P. R. R.	
Philadelphia		
Philadelphia Tfr.	P. R. R.	
S. Philadelphia Sta.	P. R. R.	
Federal St. Sta.	P. R. R.	
Produce Term.	P. R. R.	
Broad & Wash. Av	P. R. R.	
31st & Chestnut St.	P. R. R.	
Walnut St. Sta.	P. R. R.	
Dock St. Sta.	P. R. R.	
Shackamaxon Sta.	P. R. R.	
Kensington Sta.	P. R. R.	
Fairhill Sta.	P. R. R.	
Ontario St. Sta.	P. R. R.	
Willow & Noble St.	Rdg.	6,000
Ches't. (Pier 8 S.)	Rdg.	6,000
Wayne Jct. Tfr.	Rdg.	3,500
Pier 24	B. & O.	4,000
Produce Term.	B. & O. (p)	5,000
Race St.	B. & O. (p)	5,000

(p) Denotes platform trucks

PENNSYLVANIA (Cont.)

Station	Railroad	Max. Capy. Lb.
Pitcairn Tfr.	P. R. R.	
Pittsburgh		
Fed. St.	P. R. R.	
11th St.	P. R. R.	
	B. & O.	6,000
	N. Y. C. (P. & L. E.)	6,000
Pottstown	P. R. R.	
Reading	P. R. R.	
	Rdg.	6,000
Scranton Tfr.	D. L. & W.	
Steelton	P. R. R.	
Stroudsburg	D. L. & W.	
Titusville	P. R. R.	
Uniontown	P. R. R.	
Warren	P. R. R.	
Washington	P. R. R.	
Wikes-Barre	P. R. R.	
Williamsport	P. R. R.	
York	P. R. R.	

RHODE ISLAND

Providence	N. Y. N. H. & H.	4,000

SOUTH CAROLINA

Columbia	A. C. L. (p)	2,000

SOUTH DAKOTA

Sioux Falls	G. N. (p)	4,000
Watertown	G. N. (p)	4,000

TENNESSEE

Memphis	I. C.	4,000
	St. L.-S. F.	
	Sou.	2,000
	C. R. I. & P.	2,000

TEXAS

Amarillo	A. T. & S. F.	4,000
Corpus Christi	M. P.	2,000
Dallas	A. T. & S. F.	4,000
	C. R. I. & P.	
	St. L. S. W.	5,000
	T. & P.	4,000
	M.-K.-T.	2,000
El Paso	A. T. & S. F.	4,000
Fort Worth	A. T. & S. F.	4,000
	C. R. I. & P.	2,000
	T. & P.	2,000
	M.-K.-T.	2,000
Galveston	A. T. & S. F.	4,000
Harlingen	M. P.	2,000
Houston	C. R. I. & P.	4,000
	M. P.	4,000
	M.-K.-T.	5,000
Laredo	M. P.	2,000
Lubbock	A. T. & S. F.	4,000
San Antonio	M.-K.-T.	2,000
	M. P.	2,000

TEXAS (Cont.)

Station	Railroad	Max. Capy. Lb.
Temple	A. T. & S. F.	4,000
Tyler	St. L. S. W. (p)	4,000
Waco	St. L. S. W. (p)	4,000
Wichita Falls	M.-K.-T.	2,000

UTAH

Ogden	U. P.	
Salt Lake City	U. P.	
	W. P.	4,000

VERMONT

Newport Storage Shed	C. P. R.	3,000

VIRGINIA

Bedford	N. & W. (p)	2,000
Bristol	N. & W.	2,000
Lynchburg	N. & W.	2,000
Martinsville	N. & W.	2,000
Norfolk (Pier S)	N. & W.	4,000
(City Sta.)	N. & W.	4,000
	Vgn.	4,000
	P. R. R.	
Petersburg	N. & W.	2,000
	A. C. L.	4,000
Pinner's Point	Sou.	2,000
	A. C. L.	4,000
Portsmouth	S. A. L.	
Pulaski	N. & W.	2,000
Radford	N. & W.	2,000
Richmond	A. C. L.	2,000
Roanoke	N. & W.	4,000
Shenandoah	N. & W.	2,000
Winchester	P. R. R.	

WASHINGTON

Seattle	U. P.	
	G. N.	2,000
	N. P.	4,000
	C. M. St. P. & P.	
Spokane	N. P.	4,000
	G. N.	3,000
	S. P. & S.	4,000
Tacoma	G. N.	4,000
	N. P.	4,000
Yakima	N. P.	4,000

WEST VIRGINIA

Bluefield	N. & W.	2,000
Charleston	N. Y. C.	4,000
Clarksburg	B. & O.	6,000
Huntington	C. & O.	4,000
Mullens	Vgn. (p)	4,000
Norton	N. & W.	2,000
Parkersburg	B. & O. (p)	5,000
Wheeling	B. & O. (p)	5,000
Williamson	N. & W.	2,000

WISCONSIN

Station	Railroad	Max. Capy. Lb.
Milwaukee	C. M. St. P. & P.	
	G. T. W.	4,000
Superior	G. N.	4,000

WYOMING

Cheyenne	U. P.	

ALBERTA (Canada)

Edmonton	C. P. R. (p)	2,500
Lethbridge	C. P. R. (p)	2,500

BRITISH COLUMBIA (Canada)

Vancouver Piers	G. N.	4,000
	C. P. R.	10,000
Frt. Sta. & Tfr.	C. N. R.	4,000

MANITOBA (Canada)

Winnipeg	C. N. R.	4,000
	C. P. R. (p)	2,500

NEW BRUNSWICK (Canada)

St. John Piers	C. N. R.	4,000
St. John Reed's Point	C. P. R.	4,000
West St. John (winter)	C. P. R.	4,500

NOVA SCOTIA (Canada)

Digby	C. P. R.	4,000
Halifax Piers	C. N. R.	6,000

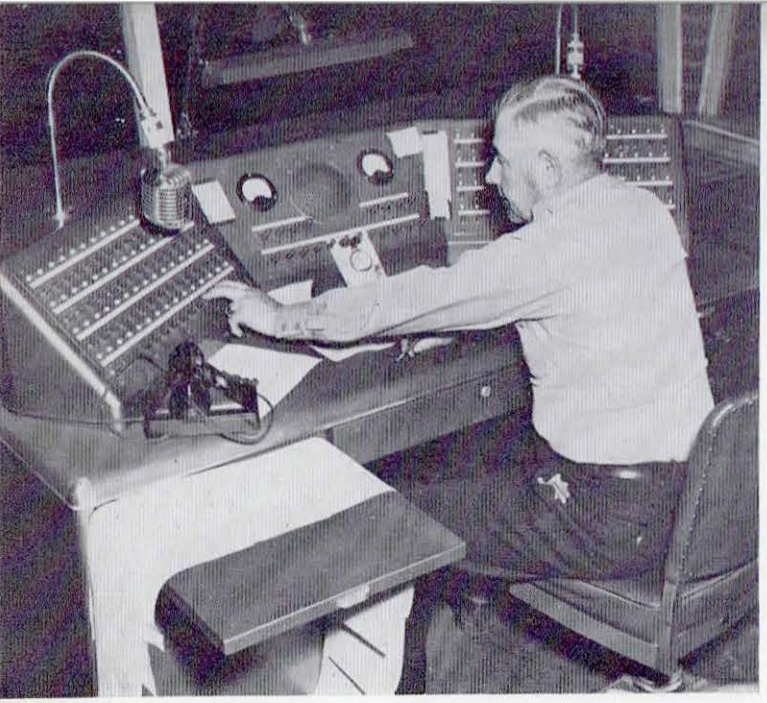
ONTARIO (Canada)

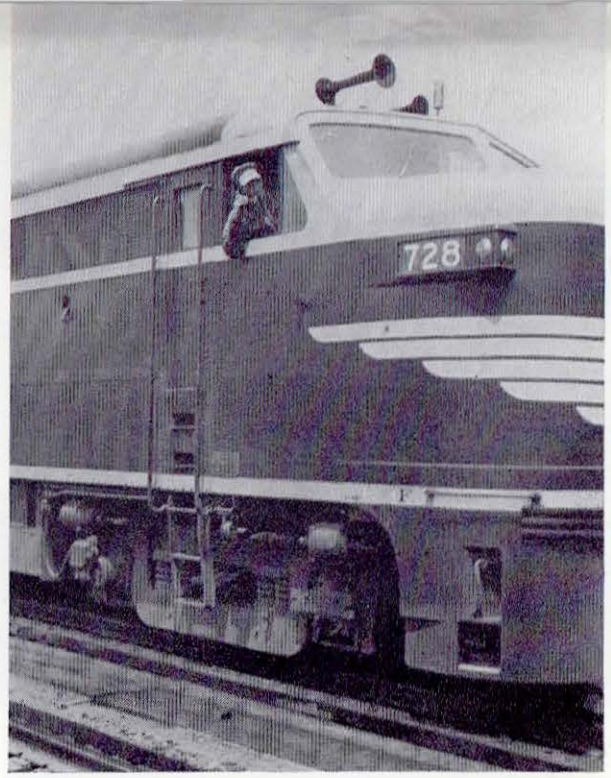
Cornwall	C. N. R.	4,000
Fort William	C. P. R. (p)	2,500
Galt	C. P. R. (p)	2,000
Guelph	C. N. R.	5,000
Kitchener	C. N. R.	5,000
London	C. N. R.	4,000
	C. P. R. (p)	2,500
Merritton	C. N. R.	4,000
North Bay	C. P. R. (p)	2,500
Ottawa	C. N. R.	5,000
Peterboro	C. N. R.	5,000
Point Edward Piers	C. N. R.	6,000
Port Arthur Piers	C. N. R.	6,000
St. Catharines	C. N. R.	2,500
Stratford	C. N. R.	5,000
Toronto	C. N. R.	4,000
	C. P. R.	2,000
West Toronto	C. P. R. (p)	2,500
Windsor	C. N. R.	5,000

QUEBEC (Canada)

Montreal Piers		
(summer)	C. P. R.	4,500
	C. N. R.	6,000
Frt. Sta. & Tfr.	C. N. R.	5,000
Place Viger Sta.	C. P. R.	4,000
Quebec	C. N. R.	5,000
Sherbrooke	C. P. R.	2,500

(p) **Denotes platform trucks**





COMMUNICATIONS Speed 'em Up

Modern telephone, telegraph, loud-speaker and radio facilities expedite shippers' freight in yards and on the road

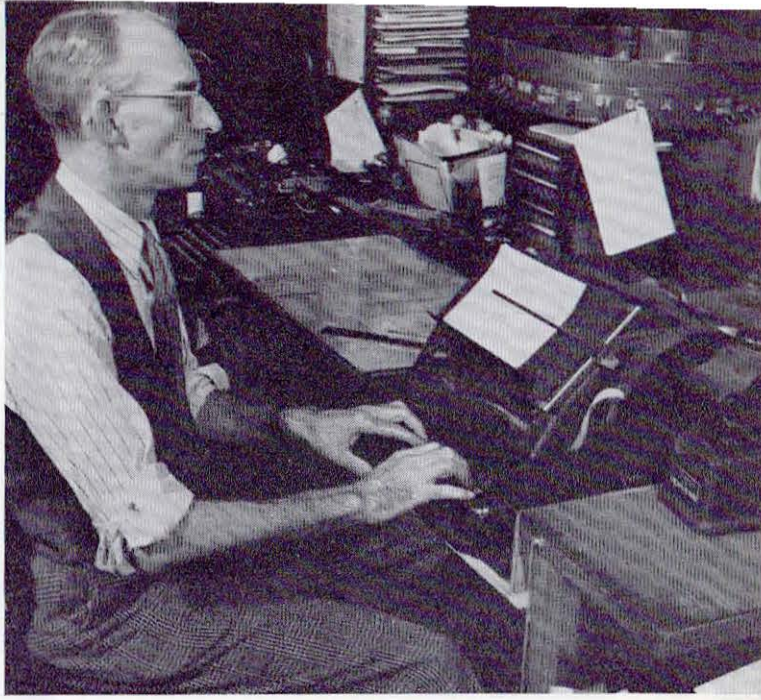
Loud-speakers in yards and freighthouses, radio and inductive communication systems on the road and in yards, printing telegraph networks between offices in distant cities, and conventional telephone and telegraph service—all of these facilities are contributing largely to increased overall operating efficiency of freight trains, and thereby insuring more efficient service to shippers. A few examples of how this is being accomplished are illustrated here.

Two-way and paging loud-speakers, as well as radio and inductive systems for communication between yard-

To expedite freight, many roads have placed in service two-way talk-back and paging loud-speakers for the direction of switching crews on the ground in classification yards, such as this Baltimore & Ohio installation in its Barr yard at Riverdale, Ill. The yardmaster sits at a loud-speaker control panel in one of two new identical communication towers which dominate the yard. The new communication facilities save about 20 min. for each westbound train entering the yard

Several roads are increasing overall efficiency of train operation on the road by use of two-way radio communication between the head and rear ends of freight trains. The engineer of this Erie freight train is talking by radio to the conductor in the caboose. The Erie's installation also includes several radio-equipped wayside offices for two-way communication with trains

Talk-back loudspeakers in yards, such as this installation on the Denver & Rio Grande Western at Pueblo, Colo., permit two-way conversation to be carried on between the yardmaster and crewmen, thus expediting switching



masters and crews in yards and industrial areas, are saving considerable time in the classification and switching of cars. Two-way communication between the head and rear ends of freight trains, as well as between trains and wayside offices on the road, is reducing unusual delays such as those incurred as a result

Two-way radio communication between yardmasters and switching engines in yards and industrial areas is affording more efficient service to shippers, because last-minute instructions to pick up or deliver cars may be transmitted instantly. This fireman on a Diesel-electric locomotive of the Toledo Terminal Railroad is receiving such an instruction by radio from the yardmaster at Boulevard yard in Toledo

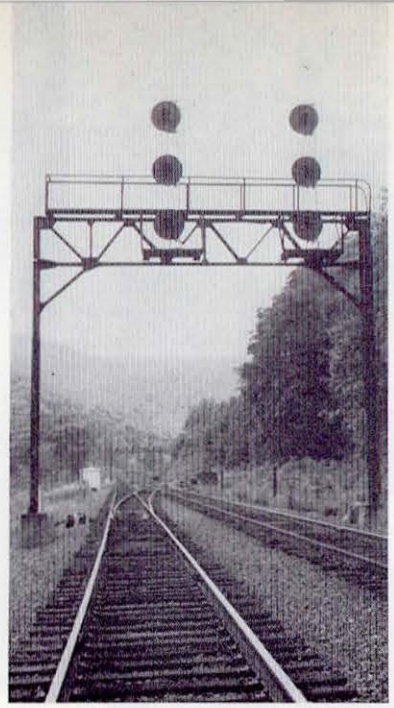
Printing telegraph systems speed up the transmission of important messages concerning freight movements, thus affording better service to shippers. This machine is transmitting a message from the Norfolk & Western's communications office at Portsmouth, Ohio

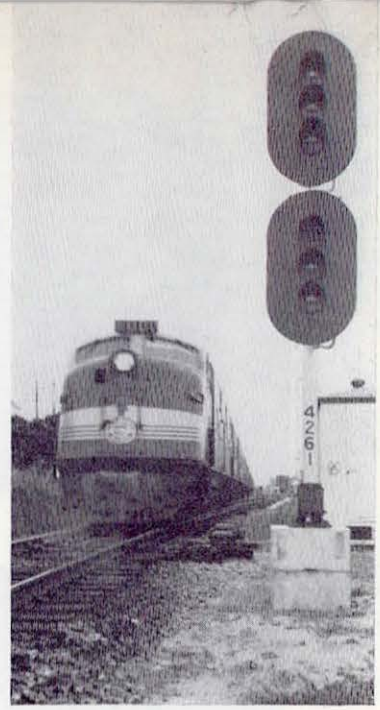
The handling of l.c.l. freight in large freighthouses is expedited by telephone and loud-speaker systems by means of which loaders, checkers and other employees are informed immediately of changing conditions. This Missouri Pacific freighthouse in Kansas City has a loud-speaker attached to an overhead beam

of hot boxes, pulled draw bars, dragging brake rigging or other equipment failures, thus effecting substantial savings in the time freight trains are on the road between terminal points.

Printing telegraph installations in freight yards facilitate delivery and processing of train consists well in advance of train arrivals, thereby enabling yardmasters to line up yard tracks and crews in advance and to start the classification of the trains without delay immediately upon their arrival. Similarly, such facilities between yards and various strategic points elsewhere on the railroad permit closer records to be kept of cars en route, enabling the railroads to keep their shippers and consignees advised as to where shipments are and when they will arrive.

Modern carrier communication equipment makes it possible to install more telephone and printing telegraph circuits on existing line wires, so that more messages can be handled between distant points. Modern communication facilities are thus doing a lot to keep trains rolling and to provide the shippers with the optimum in freight service.





MODERN SIGNALING—The Expediter

By saving train time otherwise lost waiting on sidings new signal systems speed up the movement of freight—with safety

The railroads are making important reductions in the overall time of freight en route by the use of modern signaling facilities to minimize or eliminate time lost when cars are passing through yards or when trains are making meets at sidings. Car retarders, power switches and signals have been installed in about 45 large classification yards to increase their operating capacity—day and night—regardless of adverse weather. They insure that cars are delivered on expedited schedule to connecting lines or to consignees. The uses of these signaling appliances are discussed in an article devoted to freight yards, elsewhere in this issue. The following outline deals with applications of signaling systems on the line of road.

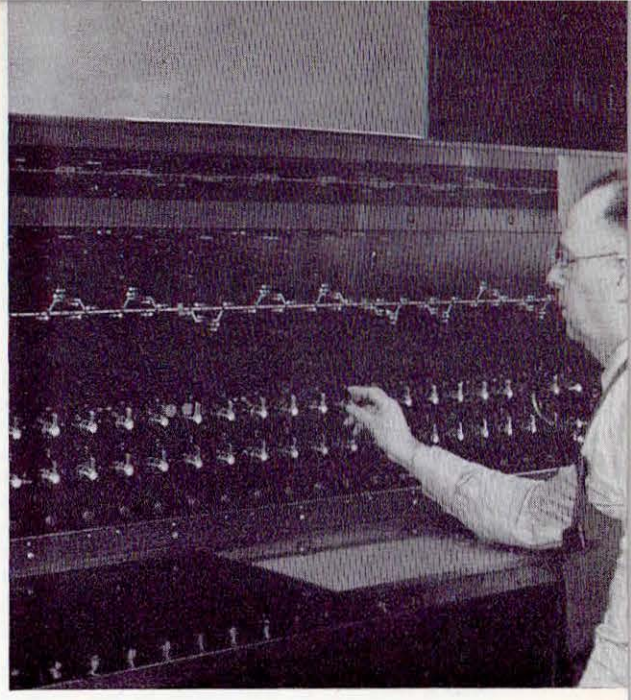
Automatic Block for Safety

For many years the railroads have been installing automatic block signaling to improve safety of train operations and thereby prevent damage or delays to freight that might otherwise result from collisions between trains, misplaced main-track switches, and fouling of main track by cars drifting on spurs. Numerous roads further increase the protection afforded by automatic signaling by introducing devices which set the signals to stop trains if damaged brake beams or other defective equipment is dragging from freight trains. Some roads have devices to detect floods; to check the alinement of bridges; and to detect a fall of large rocks on the tracks. Protective systems of this nature, based primarily on automatic block signaling, are now in service on more than 106,000 track miles throughout Canada and the United States, expediting safe and regular freight service on nearly all through routes.

Also, at more than 4,600 junctions and crossings of tracks, the railroads have installed interlockings to operate switches and signals. Each such interlocking is enhancing safety and eliminating train delays that otherwise would be occasioned at crossings and by the operation of hand-throw switches. Further time is saved at these points because train movements are coordinated under the direction of one man from a single control machine.

New System in Extended Territories

All these benefits of increased safety and savings in train time are now being secured on an extended mileage of road with a new system of signaling known as centralized traffic control. This system includes not only automatic block as protection, but also power switch machines at sidings which eliminate train stops formerly required to allow trainmen to operate hand-throw switches. These power switches, as well as the signals at these switches—on an entire division of 100 mi. or more—are all controlled by a machine in a dispatcher's office. Such a control machine includes



The illuminated track diagram on C. T. C. control machines indicates the progress being made by trains, so that the dispatcher, by means of levers, can set siding switches and signals to make close meets, thus saving train time. This machine on the Union Pacific at Los Vegas, Nev., controls part of the 625 mi. of continuous C. T. C. between Salt Lake City, Utah, and Daggett, Cal., on the route to Los Angeles

On some sections of the double track, like this line of the Boston & Maine, both tracks are signaled for train operation in both directions under C. T. C. control, so that faster trains can be run around slower ones of the same direction, with all trains continuing at normal speed, rather than delaying some of them on sidings

On the Seaboard Air Line, among other roads, the power switch machines at sidings in C. T. C. territory are controlled by a dispatcher so that trains can enter and depart without stopping to operate handthrow stands, thus saving several minutes for each train

The Norfolk & Western is one of the roads that has installed detectors—such as this installation of fencing on high poles—which, when struck by falling rocks, operate signals to stop trains and prevent accidents

Removal of a second main track, which results in a substantial reduction in maintenance expense, is sometimes possible when C. T. C. is in service, as in this installation on the Chicago, Milwaukee, St. Paul & Pacific

The Canadian National saves train time by using C. T. C. to authorize train movements by signal indication on 188 mi. between Halifax, N. S., and Moncton, N. B.

an illuminated track diagram that indicates by a series of lights the location and progress being made by all trains. Based on this up-to-the-minute information, a dispatcher sets the switches and signals to advance trains for close meets, thereby saving more time.

On many busy single-track lines, centralized traffic control is saving an average of about one minute for each through freight train for each mile operated. Train time is being saved on some sections of double track where centralized traffic control is used to authorize train movements in both directions on each track. When a preponderance of traffic is in one direction or the other, fast trains are diverted to run around slower ones, with all trains continuing at normal speed.

The railroads have adopted C.T.C. so rapidly during recent years that more than 11,500 track miles are now so equipped in Canada and the United States. Of this total, more than one-tenth—1,443 mi.—was installed in 1948, and further extensive projects are underway. A few of the outstanding installations of C.T.C. are: (1) On the Canadian National, 188 mi. between Halifax, N. S., and Moncton, N. B.; (2) on the Seaboard Air Line, nearly all of the entire 1,000-mi. main line between Richmond, Va., and Miami, Fla.; (3) on the Denver & Rio Grande Western, 466 mi. of single track and some double track on the 570-mi. route between Denver, Colo., and Salt Lake City, Utah; (4) on the Chicago, Burlington & Quincy, 476 mi. between Lincoln, Neb., and Denver; and (5) on the Union Pacific, 625 mi. between Salt Lake City, Utah, and Daggett, Cal., on the route to Los Angeles.

These installations of modern signaling are so extensive and widely scattered that freight in transit on nearly all transcontinental routes is being expedited several hours by the C.T.C. These savings, coordinated with reductions in train time being accomplished by better locomotives and track, are putting freight at destinations earlier than ever before.

GENERAL NEWS

Rebuttal Sessions End Ex Parte 168 Hearings

Requests indicate 41 hours of oral argument on rate increase

Hearings on the railroads' Ex Parte 168 petition for a permanent freight-rate increase of 13 per cent were closed by the Interstate Commerce Commission's Division 2 on May 13, after it had received rebuttal testimony in Washington, D. C., on that day. On May 16, the entire commission began hearing oral argument at which the time requested by interested parties for the purpose of making their presentations totaled 41 hours. The 13 per cent increase proposed by the railroads would supplant the interim advance of 5.2 per cent which was approved by the commission in its report of December 29, 1948.

Traffic Drop Estimated

Dr. Julius H. Parmelee, vice-president of the Association of American Railroads and director of its Bureau of Railway Economics, was the first witness at the May 13 hearing sessions. He appeared to bring up to date some of the estimates and statistical data which he had presented when he appeared at the earlier hearings in March. Railroad traffic in 1949, he said, will be less than he estimated at that time.

His latest estimate, based on data submitted by 34 representative roads, is that the ton-miles this year will total approximately 573.3 million, or 10.2 per cent less than in 1948; and that the passenger miles will total about 35.9 billion, a drop of 12.6 per cent. The B.R.E. director's March estimates forecasted drops of 8.2 per cent in ton-miles and 11.4 per cent in passenger-miles.

As to financial results, Dr. Parmelee noted that the net railway operating income for this year's first quarter—$128,415,886—was 10 per cent under that of the comparable 1948 period; and that the net income of approximately $59,000,000 represents a drop of 21.3 per cent. His index of average unit prices of railway materials and supplies, including fuel, which is based on 1933 as 100, was 267.8 as of May 1. This compared with 278.4 on February 1 and 248.1 on November 1, 1947. The fuel index was 297.5 on May, 1, as compared with 313.9 on February 1 and 291.3 on November 1, 1947.

John S. Burchmore, counsel for the National Industrial Traffic League, introduced the testimony of one witness—William B. Saunders, transportation consultant. Mr. Saunders offered an exhibit which he explained generally as an undertaking to show that railroad estimates indicated that the carriers would spend in 1949 "some $323,000,000 . . . over and above what would be required if the same efficiency and productivity or program of expenditures was maintained in 1949 . . . as in 1948." As Mr. Saunders otherwise explained his contention, it was that the allowances in carrier estimates for increases in expenses were greater by $323 million than the amount required to meet wage and price changes alone. The witness' figures and some of his statistical methods were challenged in cross-examination by Jacob Aronson, vice-president of the New York Central, who is chief counsel for the railroads in the case.

Agricultural "Calculations"

J. K. Knudson, attorney for the Department of Agriculture, offered the rebuttal testimony of J. C. Winter, chief of the Transportation Facilities Division in the Marketing Facilities Branch of the department's Production and Marketing Administration. The rebuttal was a reply to the attack made on Mr. Winter's earlier testimony and exhibits by A. H. Gass, chairman of the Car Service Division, A.A.R. (see *Railway Age* of April 23, page 49). In the presentation which Mr. Gass assailed, Mr. Winter compared transit times on various shipments of agricultural commodities with what he calculated should be "normal" transit times if railroad operations were as efficient as Mr. Winter thought they should be. Mr. Gass' reply indicated that railroad records of the transit times were at variance with those used by Mr. Winter for many of the shipments involved.

In his rebuttal testimony, Mr. Winter said that the differences between car-arrival dates used by him and those shown in railroad records were due to the fact that his "arrival" dates were those on which the shipper received notice of arrival. The discrepancies were generally explained by "failure of notification," he suggested. Mr. Winter's recheck of his figures was made on a sample basis by going over again the situation as to arrivals at Buffalo, N. Y.; but he admitted to Mr. Aronson that he made no check of N.Y.C. records to see whether or not some of the delays were due to the time required for inspection of the shipments.

Another member of the Department of Agriculture's staff, Donald C. Leavens, also testified briefly. He introduced and explained an exhibit consisting of tables showing yields on bonds and stocks and other financial data of a general nature. Other presentations included those of the

BOXCAR REUNION.—Chicago, Indianapolis & Louisville cars Nos. 1 and 2 got together on March 23 for the first time since their delivery from the Pullman-Standard Car Manufacturing Company almost two years ago. No. 1 was assisted to home rails for display at the Railroad Fair at Chicago last summer, but all other movements of the two cars have been the result of the natural flow of traffic. No. 1 had been on 51 railroads and No. 2 on 61 railroads before the coincidental homecoming. The cars are loading at Crawfordsville, Ind., before a coupled journey to San Francisco, Cal.

News Department continued on next left-hand page

A LOCOMOTIVE MODERNIZED WITH THE FRANKLIN SYSTEM OF STEAM DISTRIBUTION

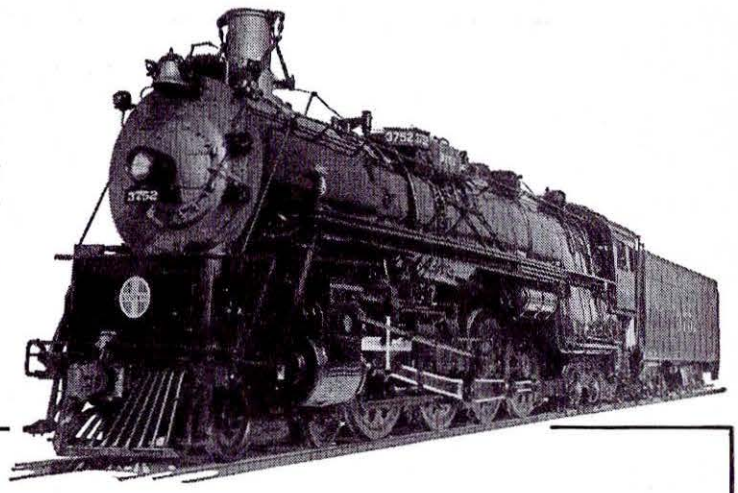
handles . . .

more freight

. . . faster with less fuel and lower maintenance

There are no other changes or combinations of changes which you can make in existing steam motive power that will produce such fundamental improvements in locomotive performance as equipping the engine with the Franklin System of Steam Distribution, using poppet valves. Without increasing fuel consumption or boiler capacity, you can increase horsepower at normal operating speeds by 19% to 30%. When this greater power is not being utilized, you will normally achieve average fuel savings ranging from 15% to 25%, depending on operating conditions.

We would like to give you figures to show what can be expected in the way of improvements from your own locomotives.



On February 4th, Sante Fe's 4-8-4 type locomotive, No. 3752, re-entered service—modernized and equipped with the Franklin System of Steam Distribution, Type B. It went into regular freight service immediately and has continued in this service without interruption. It has proved its ability to handle heavier loads and has made some remarkable cuts in running time of heavy freights. While figures are not yet available it is evident that fuel and water consumption are substantially reduced. To date valve-gear maintenance has been practically nil and there is every indication that — with poppet valves, with the simplicity of the rotary valve-gear that has all driving parts located on the outside, and with improved drifting — machinery maintenance will be reduced and locomotive availability greatly increased.

FRANKLIN RAILWAY SUPPLY COMPANY

A CORPORATION

NEW YORK • CHICAGO • MONTREAL

STEAM DISTRIBUTION SYSTEM • BOOSTER • RADIAL BUFFER • COMPENSATOR AND SNUBBER • POWER REVERSE GEARS
FIRE DOORS • DRIVING BOX LUBRICATORS • OVERFIRE JETS • JOURNAL BOXES • FLEXIBLE JOINTS • CAR CONNECTION

National Coal Association, a group of 17 steel companies, a group of eastern meat packers, and the Reynolds Metals Company. Some of these were made at a "side-show" session where Examiner J. P. McGrath presided. Thus the hearing was concluded in one day as had been planned.

How Passenger Deficit Cuts Into Freight Net

I.C.C. bureau shows effect on net railway operating income

How deficits from passenger operations of 1947 and 1948 absorbed more than one-third of the net railway operating incomes from freight service in those years was pointed up by the Bureau of Transport Economics and Statistics of the Interstate Commerce Commission in the latest issue of its "Monthly Comment." Figures in the bureau's compilations showed that the net from freight service reached a peak of $1,561.2 million in 1948, but the passenger-service deficit of $559.9 million was also a peak; and it cut last year's overall net railway operating income to $1,002 million.

For 1947, the net railway operating income was only $780.7 million, the $1,206.4 million net from freight service having been thus trimmed by the $426.5 million deficit from passenger operations. "For both 1947 and 1948," the bureau said, "the dollar deficit in passenger net railway operating income was equivalent to between 35 and 36 per cent of the net from freight service. These percentage equivalents are substantially higher than those for any of the prewar years 1936-41 excepting only 1938, despite the high level of freight service net railway operating income in the past two years. Because of the sharp decline in business in 1938, however, the passenger service net railway operating deficit in that year was equivalent to 40.76 per cent of the net from freight service."

Wartime Years Exceptional

Meanwhile, the bureau had noted that the railroads had net railway operating incomes from passenger operations during the four war years, 1942-45. It attributed that favorable showing to "troop movements, gasoline rationing, furlough travel, cessation of passenger automobile production, and other factors." And it added that the passenger earnings were then accounting "in no small degree for the high totals of net railway operating income from the combined services recorded in the war year." In 1942, when the net railway operating income was at its peak of $1,484.5 million, the net from passenger operations was $89.3 million; and in 1943, when the net was $1,359.8 million, the passenger-service net was $279.8 million. In the other two years in which it was profitable, 1944 and 1945, the passenger service earned nets of $234.1 million and $230.1 million, respectively. The 1946 deficit totaled $139.7 million.

Other figures presented by the bureau showed the net railway operating incomes from freight service and from passenger and allied services for 1948 and 1947 as reported by 27 large roads, together with the operating ratios for each class of service. Every one of the 27 roads reported deficits in net railway operating income from passenger service in both years. Although the freight net in 1948 was in every case substantially larger than in 1947, the passenger deficits were also larger with the single exception of the New York, Chicago & St. Louis. The 1948 passenger deficits ranged from the Nickel Plate's $3,778,000 to the New York Central's $48,551,000.

All 1948 passenger-service operating ratios of the 27 roads were above 100 except one—the New York, New Haven & Hartford's 92.69. That road, however, reported a 1948 deficit from passenger operations of $5,568,000. The Chesapeake & Ohio's 210.28 was the highest passenger operating ratio shown in the 1948 compilation. That road's deficit from last year's passenger operations totaled $23,210,000, as compared with a deficit of $18,652,000 in 1947, when its ratio was 192.63. The Nickel Plate's 214.41 was the highest 1947 ratio shown.

Similar data for all Class I roads by territories showed that the Western district had the largest passenger deficits in 1948 and 1947—$234.7 million and $171.1 million, respectively. Next came the Eastern district, with a 1948 deficit of $216.5 million, compared with one of $169.8 million in 1947. The passenger-service operating ratio was highest in the Pocahontas region in both years, 177.8 in 1948 and 160.8 in 1947. The respective ratios of the other territories were: Eastern district, 120.8 and 113.8; Southern region, 127.4 and 117.6; Western district, 132.2 and 119.

Another article in the "Comment" compared the 1948 and 1947 traffic and revenue of the Class I roads from the 32 commodities which account for "almost 75 per cent of the total originated tonnage and 60 per cent of the total freight revenue." The figures, taken from the preliminary summary of freight Commodity Statistics, showed that the 1948 tonnage originated was above that of 1947 in 13 of the 32 commodity classes, while all 32 classes except corn showed increases in revenue. That drop amounted to 21.7 per cent, the tonnage of corn originated in 1948 having been down 30.6 per cent from the 1947 total.

Other changes in tonnages originated ranged from a 43.3 per cent increase in the case of crude petroleum to a drop of

(*Continued on page* 204)

JOHN BUDD TO G. N. AS OPERATING HEAD; RODDEWIG C. & E. I. CHIEF

John M. Budd, president of the Chicago & Eastern Illinois since June 1, 1947, was on May 12, elected operating vice-president of the Great Northern, with headquarters at St. Paul, Minn., effective May 16. He was succeeded as C. & E. I. head by Clair M. Roddewig, vice-president and general counsel, who joined the railroad in 1946 as general counsel, after having served for several years in the law department of the Office of Defense Transportation at Washington, D. C. Mr. Budd, in his new position, returns to the road with which he began his career in 1926 and served continuously except for army duty and his tenure with the C. & E. I. He succeeds the late Thomas F. Dixon.

Justice Department Tries New Tack on Eastern Rate Pact

Department of Justice attorneys subjected railroad witnesses to extended cross-examinations at last week's hearings at Washington, D. C., in connection with the Interstate Commerce Commission's consideration of the rate-procedures agreement proposed for commission approval by eastern roads. This represented a reversal of the tactics employed by the department at the last month's hearings on the agreement proposed by carrier members of the Western Traffic Association. The agreements have been filed under section 5a of the Interstate Commerce Act, which was added last year by the Bulwinkle-Reed Act.

When witnesses supporting the western agreement were tendered for cross-examination, Justice Department attorneys announced that they had no questions. They went on to assert that the evidence offered by the railroads had been insufficient to justify a commission order approving the application; that such evidence was "irrelevant"; and that any cross-examination would be "irrelevant." Neither did the department offer any presentation of its own with respect to the western agreement. (See *Railway Age* of April 16, page 79.)

At the hearings on the eastern agreement, which were held from May 11 to 13, inclusive, before Commissioner Rogers and Examiner Burton Fuller, the May 12 and 13 sessions ran into overtime to permit completion of the cross-examinations. And the department's attorneys announced their plans to introduce various documents taken from records of Congressional investigations and files of the Association of American Railroads. James E. Kilday, ranking Justice Department attorney at the hearing, said that the documents would be offered as evidence designed to show that the A.A.R. has in the past participated in rate-making activities of the railroads. Commissioner Rogers agreed to hold another session of the hearing on May 18 for the purpose of receiving this evidence, although he said that the department had already had ample time to prepare its case.

As noted in the *Railway Age* of May 14, page 61, the principal witness in

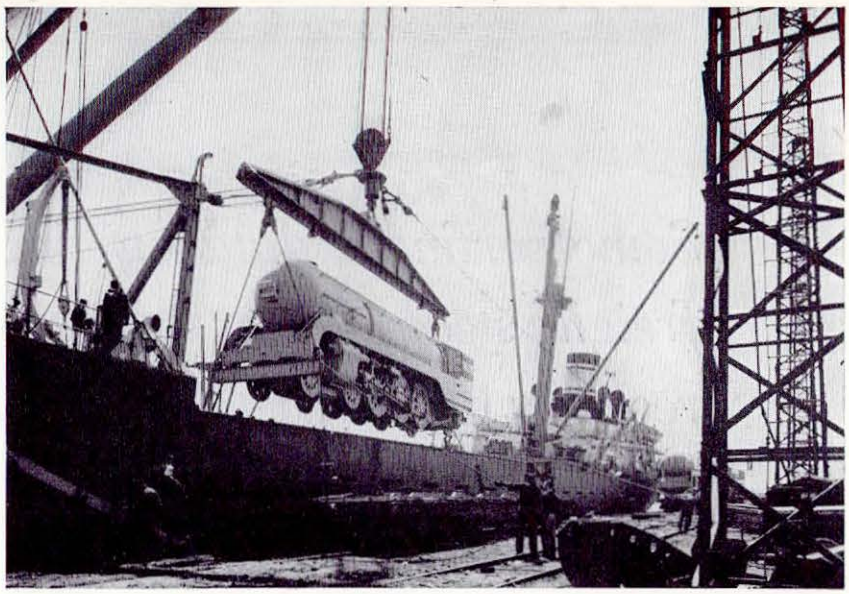
support of the eastern agreement was John J. Fitzpatrick, chairman of the Traffic Executive Association—Eastern Territory, who was followed on the witness stand by H. W. Von Willer, vice-president of the Erie, and Fred Carpi, vice-president of the Pennsylvania. Other railroad witnesses were: J. A. Fisher, vice-president, Reading; A. W. Richardson, freight traffic manager, Wabash; J. R. MacAnanny, assistant freight traffic manager, Boston & Maine; O. E. Schultz, chairman, Coal, Coke & Iron Committee of Trunk Line Territory Railroads; Vanderbilt Armold, chairman, Trunk Line-Central Passenger Committee; and F. H. Baird, general passenger traffic manager, New York Central.

Messrs. Carpi, Schultz, Von Willer and Fitzpatrick were subjected to the cross-examination by Justice Department attorneys, Mr. Fitzpatrick bearing the brunt of such questioning. Generally, the cross-examination related to the power which the plan granted to its top committees, i.e., the Traffic Executive Association and the Presidents Traffic Conference. Also, the Justice Department attorneys asked questions calculated to support the department's contention that the agreement does not, as it purports to do, accord individual roads the right to take independent action in rate matters. On that matter, Mr. Fitzpatrick cited the provision which stipulates that the right of independent action is preserved "notwithstanding anything in this agreement."

Meanwhile, H. A. Hollopeter, transportation director of the Indiana State Chamber of Commerce, appeared to report that Indiana shippers were in "wholehearted support of the general provisions and the principles involved in this agreement." However, Mr. Hollopeter proposed two changes in the agreement. He suggested that action by the rate committees should be taken by a majority vote, rather than the ¾ vote provided for in the agreement; and he would remove provisions permitting a chairman of a rate committee to appeal a matter.

For the National Industrial Traffic League, R. V. Craig, general traffic manager, Allied Mills, Inc., Chicago, made a statement similar to the one he made on the western agreement. Thus he put the league on record in general support of the agreement, but suggested some modifications of specific provisions. Like Mr. Hollopeter, Mr. Craig would remove the provisions permitting a chairman of a rate committee to appeal a matter. He would also provide for the republication of rates being continued beyond an originally published expiration date, so shippers would have notice of such extensions.

A brief statement of concurrence in Mr. Craig's presentation was made by the league's president—A. H. Schwietert, traffic director of the Chicago Association of Commerce. C. A. Miller, vice-president and general counsel of the American Short Line Railroad Association, announced that this association supported the application and adopted Mr. Fitzpatrick's presentation with which it was in full agreement.



The first 36 of 100 steam locomotives ordered from the Baldwin Locomotive Works by India were shipped from Philadelphia, Pa., late in April. The streamlined locomotives and their tenders, making up the entire cargo of the S. S. Peter Dal, will be unloaded in Bombay after a 27-day voyage and allocated for passenger service on the Indian State Railways. The locomotives are of the 4-6-2 type with a 5-ft. 6-in. gage. Tractive effort is rated at 30,600 lb. Shipping weight of the locomotive is 197,545 lb. and of the tender 75,565 lb. The units are mounted on rails and ride both on deck and in the ship's hold. They were specially blocked and lashed with steel strapping to prevent movement during the roughest weather

Freight Car Loadings

Carloading figures for the week ended May 14 were not available when this issue went to press.

Loadings of revenue freight for the week ended May 7 totaled 768,337 cars, and the summary for that week as compiled by the Car Service Division, Association of American Railroads, follows:

Revenue Freight Car Loadings
For the week ended Saturday, May 7

District	1949	1948	1947
Eastern	137,328	158,599	162,595
Allegheny	166,037	180,939	188,618
Pocahontas	63,878	73,476	74,543
Southern	115,667	142,887	140,862
Northwestern	119,310	129,490	126,154
Central Western	110,104	126,614	125,658
Southwestern	56,013	68,282	65,812
Tot. Western Dist.	285,427	324,386	317,624
Total All Roads	768,337	880,287	884,242
Commodities:			
Grain and grain products	43,991	40,818	42,023
Livestock	10,508	14,623	14,251
Coal	157,249	188,049	189,072
Coke	14,171	14,104	14,625
Forest products	38,011	43,439	48,722
Ore	72,780	77,909	70,314
Merchandise l.c.l.	94,317	110,441	122,626
Miscellaneous	337,310	390,904	382,609
May 7	768,337	880,287	884,242
April 30	785,444	891,115	882,574
April 23	769,336	851,926	893,712
April 16	765,890	784,611	865,844
April 9	757,784	682,934	757,839
Cumulative total 18 weeks	12,802,055	13,916,485	14,829,675

In Canada.—Car loadings for the week ended May 7 totaled 74,354 cars, compared with 74,098 cars for the previous week and 75,338 cars for the corresponding week last year, according to the compilation of the Dominion Bureau of Statistics.

	Revenue Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada:		
May 7, 1949	74,354	32,240
May 8, 1948	75,338	31,634
Cumulative totals for Canada:		
May 7, 1949	1,303,261	573,231
May 8, 1948	1,326,750	652,429

I. C. C. Lets B. of L. E. Intervene in Reparations Cases

The Brotherhood of Locomotive Engineers has been authorized by the Interstate Commerce Commission to intervene in 17 pending proceedings which involve the federal government's claims for reparations on railroad rates paid for its shipments of various commodities during World War II. The brotherhood's petition for leave to intervene asserted the petitioner's opposition to the government's claims (see *Railway Age* of April 2, page 48).

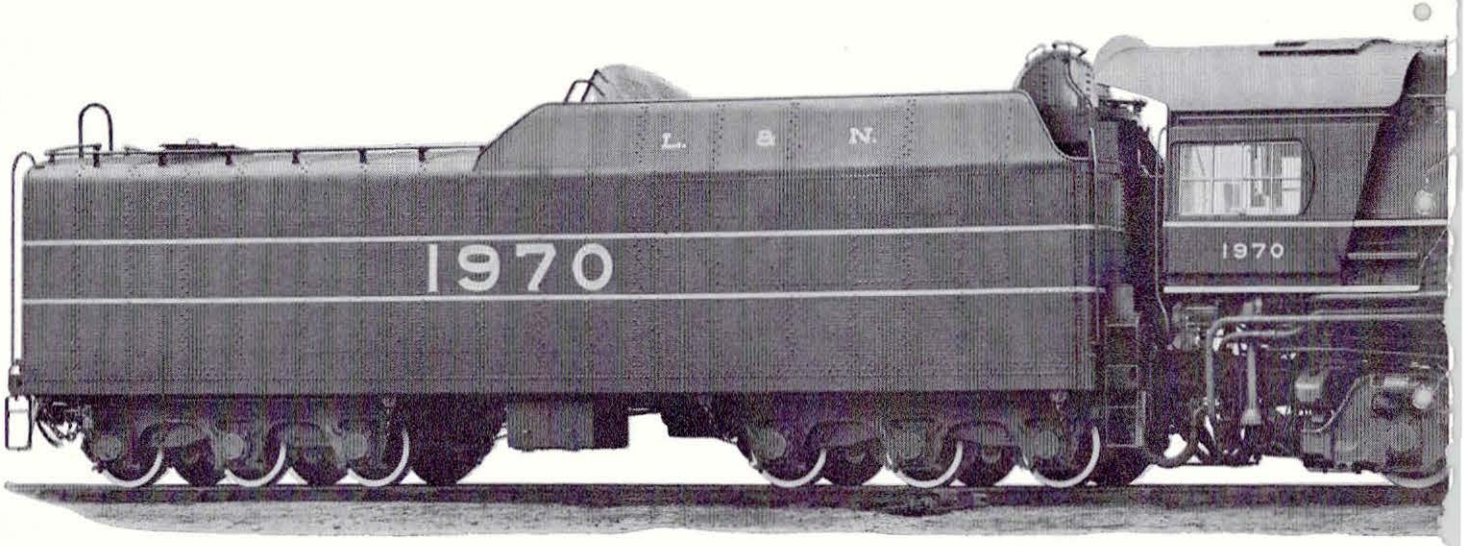
N. Y. C. Coach-Reconditioning Program to Cost $4,000,000

The New York Central is completing this spring the reconditioning of 100 standard coaches at a total cost of approximately $2,000,000. After this program, 100 additional standard coaches

Continued on second left-hand page

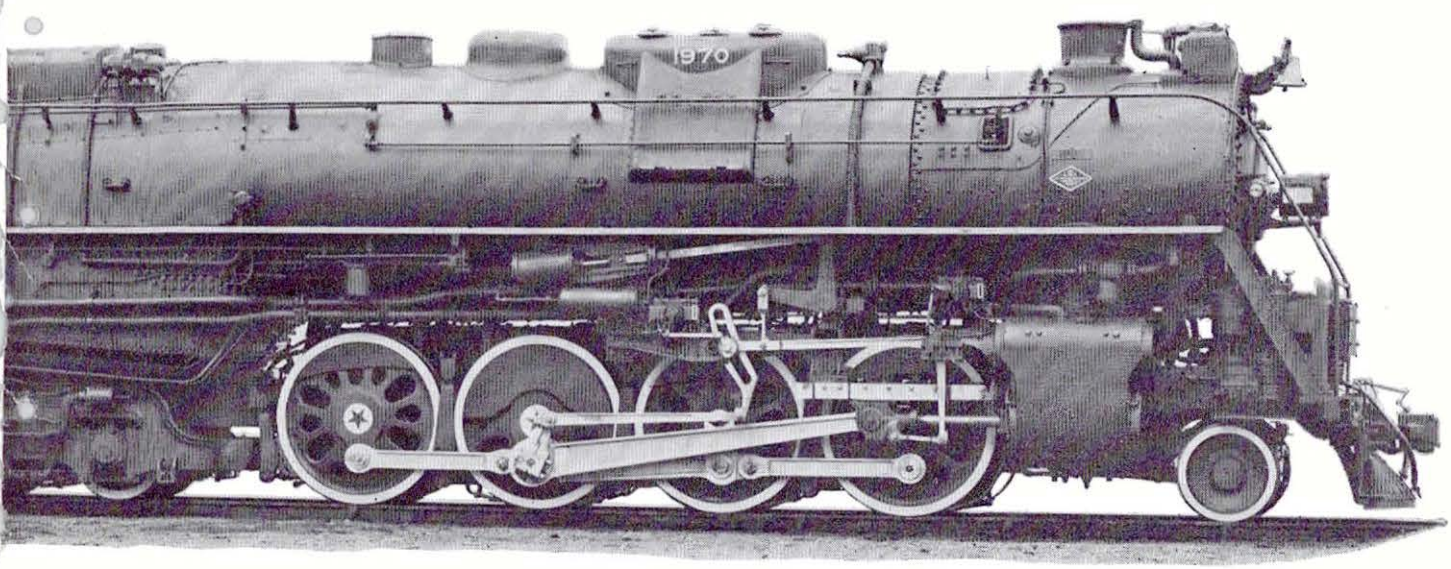
Some pertinent data on the nation's newest freight steam power - the twenty-two 2-8-4's recently delivered to the Louisville & Nashville by Lima-Hamilton.

Class M-1
Service: Freight
Road Nos.: 1970-1991
Tractive Force, main cylinders: 65,290 lb
Tractive Force, with Booster: 79,290 lb
Cylinders: 25" x 32"
Drivers, Diameter: 69"
Weight on Drivers: 267,500 lb
Weight on Front Trucks: 52,900 lb
Weight on Trailing Truck: 127,700 lb
Total Weight of Engine: 448,100 lb
Fuel: Soft Coal
Grate Area: 90 sq ft
Steam Pressure: 265 lb
Tender Capacity: 22,000 gal, 25 tons



Modern steam locomotives like these will show a good return on their investment. With planned scheduling, they can deliver more ton-miles of freight per dollar of investment than any other type of locomotive.

LIMA HAMILTON CORPORATION



will be similarly reconditioned in the road's shops at Beech Grove, Ind. All cars in the program are being equipped with electro-mechanical air-conditioning. Besides redecoration of the cars, brighter lighting is also being installed. Seats are being reupholstered and new flooring laid.

Additional General News appears on pages 204 through 208. A list of Current Publications may be found on pages 209 through 211.

ABANDONMENTS

Applications have been filed with the Interstate Commerce Commission by:

Missouri Pacific.—To abandon a car ferry across the Mississippi river and 5.5 mi. of appurtenant tracks in St. Louis County, Mo., and St. Clair County, Ill. The application stated that the M.P. has found operation under trackage rights over the Municipal bridge and lines of the Terminal Association of St. Louis less costly and more expeditious than the ferry operation.

New York, New Haven & Hartford.—To withdraw its application to abandon a line from Collinsville, Conn., to New Hartford, 6.1 mi. The application said that developments since the hearing on February 21 indicate that prospective increases in traffic on the line will be sufficient to warrant its continued operation.

ORGANIZATIONS

Superintendents Plan For 53rd Annual Convention

The American Association of Railroad Superintendents will hold its fifty-third annual meeting at the Stevens Hotel, Chicago, on June 14, 15, and 16. R. L. Williams, president of the Chicago & North Western, will address the superintendents and their guests at the annual luncheon on Wednesday, June 15, following which there will be an inspection tour of the Chicago & North Western's Proviso yard. Six committees will present reports on subjects of current importance to railroad operating officers.

TUESDAY MORNING, JUNE 14
Tower Ballroom, Registration 9 a.m.; meeting opens 10 a.m. (daylight time)
Invocation—
Very Reverend Monsignor William J. Gorman
Resurrection Church, Chicago
Charge to Railroad Superintendents—
John M. Budd
Operating vice-president, Great Northern
President's Address ..... S. M. Gossage
Report of Committee No. 4—Benefits from Complete Dieselization eof Entire Division or Subdivision ..... R. F. Jeter, chairman

TUESDAY AFTERNOON, JUNE 14
Tower Ballroom, 2 p.m.
Report of Committee No. 2—Debate on Motion: Rule 99 is Essential in Automatic Block Signal Territory.
.....affirmative, W. W. Welsh
.....negative, D. L. Badgley
chairmen
Report of Committee No. 6—New Ideas on Reducing Loss and Damage .....H. A. Moffitt, chairman

TUESDAY EVENING, JUNE 14
Tower Ballroom, 8 p.m.
An address on railroad personnel matters
.....L. W. Horning
Vice-president, New York Central

WEDNESDAY MORNING, JUNE 15
Tower Ballroom, 9:30 a.m.
Report of Committee No. 3—Superintendent's Responsibility in Fostering Better Understanding Between Employee and Management
.....W. G. White, chairman
Report of Committee No. 5—Modern Methods of Communication in Train and Yard Service
.....B. W. Tyler, chairman

WEDNESDAY NOON, JUNE 15
Boulevard Room, 12:30 p.m.
Annual Luncheon .....Speaker: R. L. Williams
President, Chicago & North Western

WEDNESDAY AFTERNOON, JUNE 15
Inspection Tour ....special Chicago & North Western train will leave North Western station at 2:30 p.m. (daylight time), visiting Proviso yard and freighthouse.

WEDNESDAY EVENING, JUNE 15
Tower Ballroom, 8 p.m.
Movies and short talks on communications in railroad operations, including the Pennsylvania's film and a talk by W. R. Triem, Gen. Supt. of Telegraph.

THURSDAY MORNING, JUNE 16
Tower Ballroom, 9:30 a.m.
Report of Committee No. 1—Methods to Reduce Passenger Train Delays at Stations
.....R. A. J. Morrison, chairman
Report on Proposed Revision of Rules for Operation in C.T.C. Territory....C. I. Morton, chairman
Business Meeting..Election of Officers..Adjournment

The **Southwest Shippers Advisory Board** will hold its twenty-sixth annual and eighty-first regular meeting on May 19-20, at the Baker Hotel, Dallas, Tex. The session—preceding the harvest of what is estimated to be a bumper grain crop, larger even than those of the past few years—will feature discussions between grain representatives and railroad operating men concerning storage and yard facilities, car supply and transportation of the crop.

The **Railroad Enthusiasts,** New York division, will hold their next meeting on May 25, at 7:45 p.m., in room 5928, Grand Central Terminal, New York. H. F. Brown, electrical engineer of the New York, New Haven & Hartford, will present an illustrated talk on "The Railroads of Spain."

The **Indianapolis Car Inspection Association** will hold its 13th annual dinner on June 6, at Buckley's, Cumberland, Ind., at 6:00 p.m. standard time. D. E. Mumford, superintendent of safety, New York Central, will be the guest speaker; the subject of his address will be "Safety in the Car Department."

The **Central Railway Club of Buffalo** will hold a golf and dinner party at the Lancaster Country Club on June 13. The tee-off will be at noon, with dinner at 6:30 p.m.

John E. Armstrong, chief engineer of the Canadian Pacific, was elected president of the **Engineering Institute of Canada** at the 63rd annual general meeting. Mr. Armstrong is a past president of the American Railway Engineering Association and of the Canadian Railway Club in Montreal, Que.

The twenty-third annual outing of the **New York Railroad Club** will be held Thursday June 9 at the Westchester Country Club and Beach Club. The affair will feature golf in the morning at the Westchester Country Club at Westchester Hills, with various activities beginning at the Beach Club at 1 p.m. Dinner at six will be followed by a special aquacade performance at 8 p.m. in the swimming pool on the beach club property.

SUPPLY TRADE

A. W. Faulconbridge, vice-president of the **Ajax-Consolidated Company,** Chicago, also has been appointed vice-president of a new company known as the **Equipment Research Corporation,** which has been formed by Ajax-Consolidated to handle various items in the air conditioning and electrical fields. Equipment Research has been appointed exclusive sales agents for the recently redesigned railroad water coolers for coaches and Pullman cars, produced by **Cordley & Hayes Co.** of New York, and also are agents for the Cordley industrial electric water coolers for use in railroad shops, stations and offices.

T. F. Perkinson, assistant manager of the transportation engineering division of the apparatus department of the **General Electric Company,** has been appointed manager of the division, to succeed **C. M. Davis,** who has retired after nearly 40 years' service with the company.

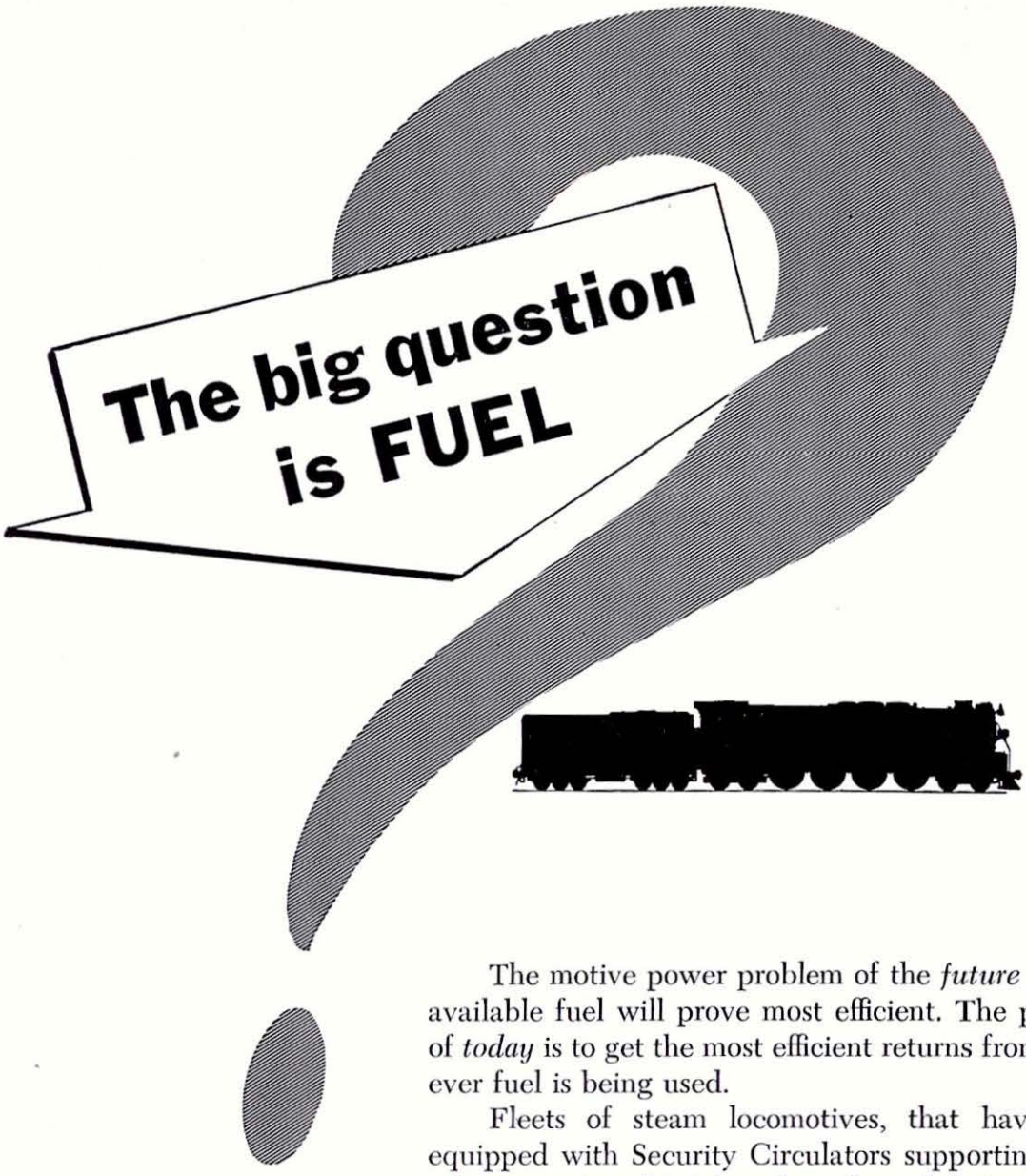
The Alan Wood Steel Company, Conshohocken, Pa., has announced the following promotions and transfers in its sales department: **J. Frederic Land,** appointed manager of sales, and **Leslie S. Bishop,** sales metallurgist; **H. E. Bossert** transferred from Philadelphia, Pa., district sales to New York district sales, and **John L. Hallman,** from general sales to Philadelphia district sales.

Richard D. Durrett, formerly acting manager of Diesel product sales of the **Baldwin Locomotive Works,** has been appointed sales manager—Diesel locomotive sales.

The **Hyster Company** has opened new Los Angeles, Cal., area retail truck sales and service facilities at 5301 Pacific boulevard, Huntington Park, Cal.

J. P. Williams, Jr., chairman of the board of directors of the **Koppers Company,** has retired from active management but will continue in his capacity as chairman of the board. He also will serve the company as an adviser on special problems. Mr. Williams was elected executive vice-president of Koppers in 1933, and president in 1939. He held the positions of chairman of the board and president from October, 1944, to April, 1946, when General Brehon Somervell was elected president. Mr. Williams was chief executive officer from 1944 to late 1948.

News Department continued on next left-hand page



The motive power problem of the *future* is what available fuel will prove most efficient. The problem of *today* is to get the most efficient returns from whatever fuel is being used.

Fleets of steam locomotives, that have been equipped with Security Circulators supporting properly proportioned brick arches, show definite gains in performance in relation to the fuel consumed. Such installations have been made by fifty railroads, in twenty-five different types of locomotives.

Many other existing locomotives could be continued in profitable service if equipped with Security Circulators to improve their operation.

* * *

The Security Dutch Oven, recently developed and introduced by the American Arch Company, has already been installed in over two hundred oil-burning steam locomotives, to increase efficiency of combustion and aid in improving steaming qualities.

American Arch Company Inc.

NEW YORK • CHICAGO

The **Automatic Transportation Company,** Chicago, has appointed the **Equipment Engineering Company,** Memphis, Tenn., as distributor for Skylift electric industrial trucks and transporter motorized hand trucks, to serve northern Mississippi, western Tennessee and eastern Arkansas.

OBITUARY

Paul A. Lockwood, New England sales manager for Hubbard & Co., died on May 7.

William H. Croft, Sr., former president and board chairman of Magnus Metal Corporation, Chicago, died at Los Angeles, Cal., on May 13, at the age of 71.

CONSTRUCTION

Elgin, Joliet & Eastern.—The company forces of this road will install automatic block signals between Dyer, Ind., and Hartsdale, at a cost of $28,987. The company also plans to convert two roundhouse stalls for Diesel locomotive repairs, install platforms, improve lighting and rearrange drainage, at East Joliet, Ill., at an expected expenditure of $22,086.

Great Northern.—Four miles of this road's 7.79-mile Cascade tunnel are being relaid with 115-lb. Oxweld pressure-welded continuous rail, at an estimated cost of $189,000. The nearly 810 tons of new steel required are being delivered to Scenic, Wash., at the west portal of the tunnel. Welding operations were begun last week, and will proceed westward from the east portal at Berne, Wash. The tunnel now has 110-lb. rail.

Great Northern.—This road recently authorized the following projects, at the costs indicated: Replace bridges No. 58.4 at Pateros, Wash. ($75,000), No. 17.6 at St. Bonifacius, Minn. ($28,500), No. 29.6 at Warren, Minn. ($26,600), and overhead bridge at Howard Lake, Minn. ($28,600); rearrange and extend depot at Shelby, Mont. ($24,600); re-wire umbrella sheds and complete similar work, at Seattle, Wash. ($25,000); renew roof of machine shop at St. Paul, Minn. ($55,000); dredge ore slips at Allouez, Wis. ($30,750); improve fruit warehouse at Winnipeg, Man. ($20,000); install teletype service between Allouez and Hibbing, Minn. ($35,000); install seven Griswold signals on the Minot (N. D.) division ($31,475); repair overhead bridge at Mississippi street, St. Paul ($23,600); repair concrete lining in tunnel No. 3 at Pinnacle, Mont. ($60,000); replace lining in tunnel No. 72.4 at Colfax, Wash. ($48,000); fill bridge No. 77.1 at New Westminister, B. C. ($36,000); renew bridge No. 400 at Keremeos, B. C. ($50,900); repair and improve bridges between Oroville, Wash., and Hedley, B. C. ($69,070); perform bridge and culvert work on the Kalispell (Mont.) division ($32,115); remodel bridge No. 232.1 at Avoca, N. D. ($30,800); replace portion of bridge No. 452 at Fryelands, Wash. ($39,200); replace, with steel, a portion of bridge No. 463 at Lowell, Wash. ($24,500); install equalizer culvert at Bonners Ferry, Mont. ($20,700); and perform temporary work for under-crossing at Trinidad, Wash. ($20,730). The state of North Dakota is handling the bulk of work in connection with a $215,000 underpass project at Towner.

Northern Pacific.—This road will construct a store and service building at the coach yard in Seattle, Wash., at a cost of $232,100. The new facility, as is the case with various other properties at Seattle, will be used jointly by the N. P. and the Great Northern. Work is progressing on the N. P.'s installation of a central heating plant in the King Street passenger station (also jointly owned with the G. N.) at Seattle, at a cost of $205,600.

EQUIPMENT AND SUPPLIES

LOCOMOTIVES

The Canadian National has ordered 18 72-ton 600-hp. Diesel-electric locomotive units from the Canadian General Electric Company and 20 1,000-hp. Diesel-electric switching units from the Montreal Locomotive Works. The latter will be assigned to service at various terminals in Canada and the 600-hp. units will be placed in general service on Prince Edward Island.

The board of directors of the **Great Northern,** on May 12, authorized the purchase of 36 Diesel-electric locomotives for freight, passenger and switching service, at an estimated cost of $7,300,000. An additional $1,700,000 is to be spent for four new lightweight baggage cars, shop machinery, roadway equipment and additions to existing facilities.

FINANCIAL

New Securities

Applications have been filed with the Interstate Commerce Commission by:

Delaware Lackawanna & Western.—To assume liability for $3,150,000 of series I equipment trust certificates to finance in part the acquisition of the following equipment:

	Description and builder	Estimated Unit Cost
1	4,500-hp. Diesel-electric freight locomotive (General Motors Corporation, Electro-Motive Division)	$483,000
6	3000-hp. Diesel-electric freight locomotives (Electro-Motive)	320,000
100	70-ton covered hopper cars (American Car & Foundry Co.)	6,420
10	Low-alloy, high-tensile, all-steel passenger coaches (Pullman-Standard Car Manufacturing Company)	98,000

Total estimated cost of all of the equipment is $4,025,000. The certificates would be dated April 1 and would mature in 15 annual installments of $210,000 each, beginning April 1, 1950. They would be sold on the basis of competitive bids with the interest rate fixed by such bids.

Northern Pacific.—To assume liability for $6,450,000 of equipment trust certificates to finance in part the acquisition of 1,200 freight cars and 4 4,500-hp. Diesel-electric passenger locomotives at a total estimated cost of $8,176,000. The freight cars, to be built in N.P. shops, will include 750 50-ton steel-sheathed, wood-lined box cars costing $4,900 each; 250 50-ton, all-steel gondola cars costing $5,200 each; and 200 70-ton all-steel ore cars costing $5,400 each. The locomotives will be purchased from the Electro-Motive Division of General Motors at an average cost of $530,250 per locomotive. The certificates, dated June 15, would mature in 15 annual installments of $430,000 each, beginning June 15, 1950. They would be sold on the basis of competitive bids, and the interest rate would be fixed by such bids.

Division 4 of the I. C. C. has **authorized:**

Chicago, Rock Island & Pacific.—To assume liability for $3,528,000 of series D equipment trust certificates to finance in part the acquisition of 10 4,500-hp. Diesel-electric freight locomotives at a total estimated cost of $4,705,528 (see *Railway Age* of April 9, page 74). The certificates will be dated May 15 and will mature in 24 semi-annual installments of $147,000 each, beginning November 15, 1949. The commission's report approved a selling price of 99.425 with a 2⅛ per cent interest rate—the bid of Salomon Brothers & Hutzler, which will make the average annual interest cost approximately 2.22 per cent. The certificates were reoffered to the public at prices yielding from 1.25 to 2.425 per cent, according to maturity.

Dividends Declared

Chicago, Rock Island & Pacific.—preferred, $1.25, quarterly; common, 75¢, quarterly; both payable June 30 to holders of record June 15.

Pittsburgh & Lake Erie.—$2.00, payable June 15 to holders of record May 25.

RAILWAY OFFICERS

EXECUTIVE

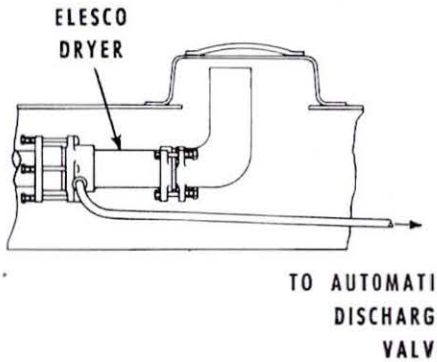
Howard C. Greer, budget director, and a board member of the Chicago, Indianapolis & Louisville since 1946, has been elected vice-president—finance, with responsibility for advisory service to the management and the board on budgetary and financial problems.

C. McD. Davis, president of the Atlantic Coast Line and vice-president of the Winston-Salem Southbound, has been

News Department continued on next left-hand page

"A generation or so ago, with little water treatment, the major action of dissolved solids was to form scale, and foaming was not a problem. By proper treatment of water supplies, scale is no longer a problem, but the introduction of alkaline sodium compounds has increased the foam-producing capacity of the water supplies."

American Railway Engineering Association.



Boiler carryover increases fuel consumption and decreases the life of the superheater units.

Control this condition with the

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THE
SUPERHEATER
COMPANY, INC.
Division of COMBUSTION ENGINEERING - SUPERHEATER, INC.
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Montreal, Canada, THE SUPERHEATER COMPANY, Ltd.

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elected president of the latter company, with headquarters as before at Wilmington, N. C. **R. H. Smith** has been elected vice-president, with headquarters at Roanoke, Va.

OPERATING

Harrison B. Smith, whose promotion to superintendent of the Chicago, St. Paul, Minneapolis & Omaha (part of the Chicago & North Western System) at St. James, Minn., was reported in the *Railway Age* of May 7, was born on July 14, 1892, at Eau Galle, Wis., and received his higher education at Teachers College in River Falls, Wis. He entered C.St.P. M. & O. service in April, 1916, as a telegrapher, and subsequently served in that position at various points, including Baldwin, Wis., Stillwater, Minn., East St. Paul, and Eau Claire, Wis. He was also

Harrison B. Smith

agent telegrapher at Spring Valley, Wis., and later held the positions successively of train dispatcher at Eau Claire, system rules examiner and transportation inspector, being appointed assistant trainmaster at Chicago in June, 1944. The following year he was advanced to trainmaster at Boone, Iowa, and in 1946, was transferred to Milwaukee, Wis. From October, 1946 to May, 1948, Mr. Smith served as assistant superintendent at St. James. He was next transferred to Eau Claire, where he continued as assistant superintendent until his recent promotion.

Bernard R. Tolson, manager of the Washington Terminal Company at Washington, D. C., for 23 years, has retired after 48 years of railroad service and has been succeeded by **Sidney Kerl,** who has been superintendent of the company since 1944.

R. S. Stewart, division engineer of the Pennsylvania-Reading Seashore Lines and of the Atlantic division of the Pennsylvania, has been appointed assistant to the general manager of the former, with headquarters as before at Camden, N. J.

Alfred G. Johnson, whose promotion to superintendent of terminals of the Chicago, St. Paul, Minneapolis & Omaha (part of the Chicago & North Western System) at Minneapolis, Minn., was reported in the *Railway Age* of May 7, was born on August 19, 1906, at Bryant, Iowa, where he first entered railroad service as a section worker while attending high school. In August, 1923, Mr. Johnson joined the North Western as station helper at Story City, Iowa, and subsequently held the positions successively of relief telegrapher, agent, telegrapher and leverman. He served as relief train dispatcher from 1937 to 1941, when he was advanced to assistant trainmaster at Boone, Iowa. He was appointed trainmaster at that point in 1943. Mr. Johnson was transferred to Council Bluffs, Iowa, in April, 1945, and was appointed assistant superintendent at Sioux City, Iowa, in December of the next year, which position he held at the time of his promotion.

Harry D. Johnston, who has been appointed superintendent of the Hudson and Mohawk divisions of the New York Central at Albany, N. Y., was born at Red Bank, N. J., in 1899, and entered the service of the New York Central as a clerk at Buffalo, N. Y. After one year in

Harry D. Johnston

the United States Army in 1918, Mr. Johnston returned to his former position, being promoted to yardmaster in 1923; general yardmaster in 1934 and trainmaster in 1940. He became assistant superintendent at Buffalo in 1947, which position he held at the time of his recent promotion to superintendent at Albany.

Fred J. Taylor, whose retirement as superintendent of the Chicago, St. Paul, Minneapolis & Omaha (part of the Chicago & North Western System) at St. James, Minn., was reported in the *Railway Age* of May 7, was born on March 11, 1884, at Osceola, Wis. He entered railroad service with the C.St.P.M.&O. in November, 1903, as a telegrapher, and, from 1907 to 1920, held successively the positions of relief dispatcher, regular dispatcher and assistant chief dispatcher at Omaha, Neb. He was subsequently promoted to chief dispatcher at that point, becoming trainmaster at Spooner, Wis., in 1927. In 1929 he was appointed assistant superintendent at St. James, and in 1938 was transferred to Spooner. After serving as superintendent at Superior, Wis., from 1940 to 1942, he returned to St. James as superintendent in the latter year, remaining in that post until his recent retirement.

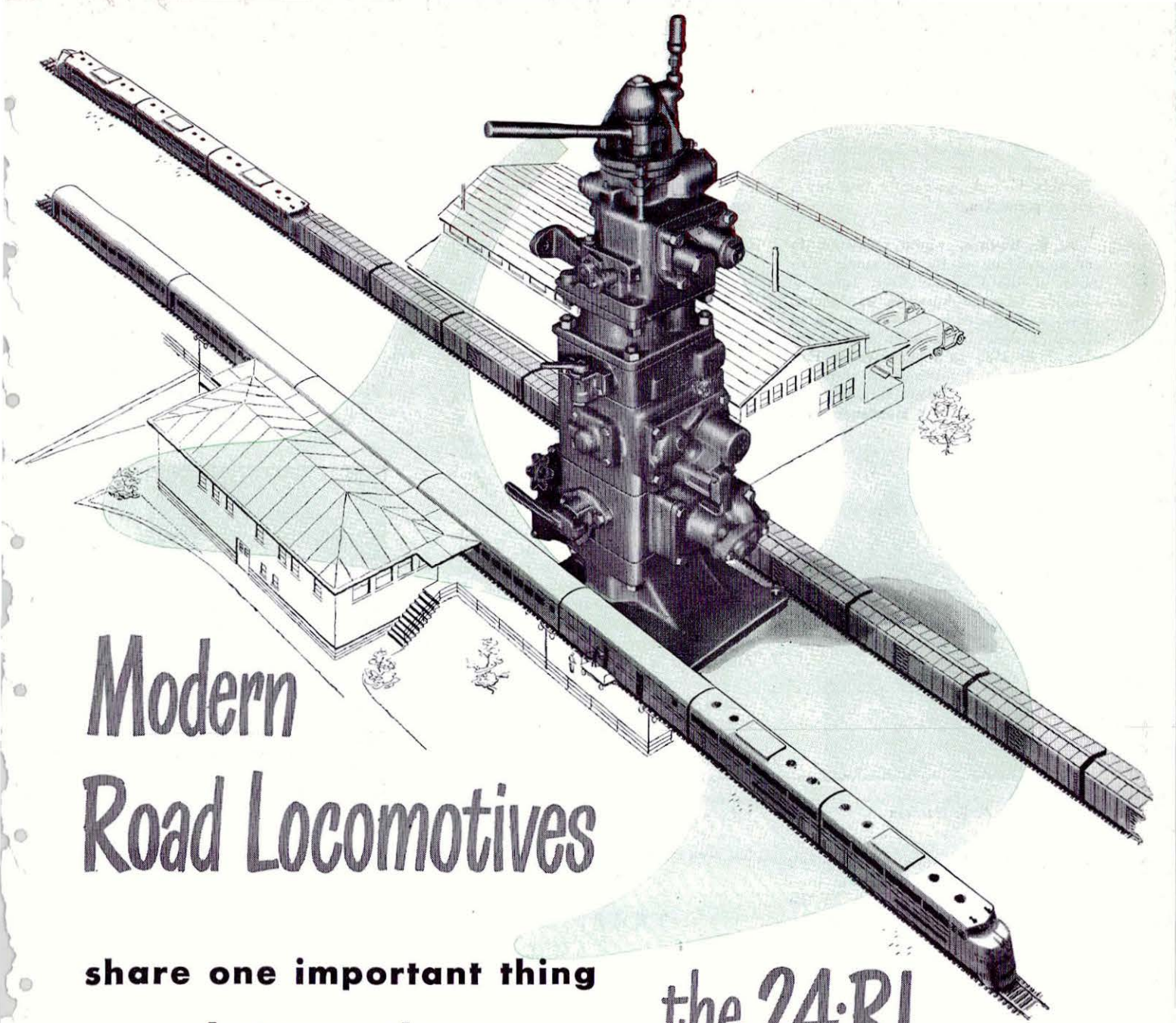
Wilbur C. Foster, whose promotion to division superintendent of the Texas & Pacific at Alexandria, La., was reported in the *Railway Age* of April 16, was born on March 1, 1914, at Shreveport, La. After attending North Texas Agricultural College from 1931 to 1932, he entered T. & P. service with the Eastern division in June, 1932. From 1934 to 1941, he held positions successively as track apprentice, Fort Worth, Tex., and section foreman, Arlington, Tex., and Dallas. He was ad-

Wilbur C. Foster

vanced to general foreman of the Weatherford, Mineral Wells & North Western (a subsidiary of the T. & P.), with headquarters at Weatherford, Tex., in January, 1941, and subsequently served as district roadmaster at Sherman, Tex., Fort Worth and Bunkie, La. Mr. Foster was appointed trainmaster at Marshall, Tex., in May, 1947, and became assistant superintendent at Fort Worth in August, 1948, which post he held at the time of his promotion.

James A. Jakubec, whose promotion to division superintendent of the Chicago, Milwaukee, St. Paul & Pacific, with headquarters at Aberdeen, S. D., was reported in the *Railway Age* of April 23, was born on December 7, 1904, at Minneapolis, Minn., He entered railroad service with the Milwaukee in June, 1920, as a clerk in his home town, and subsequently held similar positions at LaCrosse, Wis., and Wausau until 1942, when he was advanced to chief clerk to the assistant general manager at Chicago. In 1943, he was appointed trainmaster at Austin, Minn., and the next year was transferred to the Terre Haute division, with headquarters at Chicago Heights, Ill. Mr. Jakubec also served as trainmaster at

News Department continued on next left-hand page



Modern Road Locomotives

share one important thing between them . . . the 24-RL

There is one vital piece of equipment that all modern road locomotives have in common—Westinghouse 24-RL Brake Equipment. Combining of various interchangeable sections provides a wide combination of functions, which completely meet the needs of all normal assignments.

The flexibility of the 24-RL is particularly helpful in cases where assignments have not been completely defined when locomotive construction starts. Selected sections can be inserted at any time. Substitutions may be made after locomotives are in service, with no change in basic piping, if changes in assignment make this desirable.

Several typical combinations, which suggest the broad possibilities of the 24-RL, are illustrated and described in Catalog No. 2058. A copy will be sent on request.

The RAILROAD HOUR
ABC NETWORK · Monday Nights

Brakes are Basic to Railroad Progress

Westinghouse Air Brake Co.

WILMERDING, PA.

Aberdeen from April, 1945, to August, 1948, when he became assistant superintendent of the Chicago Terminals division, with headquarters at Benseville, Ill. He held the latter post at the time of his recent promotion.

A. B. Harrison, whose promotion to superintendent of the Panhandle division of the Chicago, Rock Island & Pacific, with headquarters at Liberal, Kan., was reported in the *Railway Age* of April 23, began his career with the Rock Island in 1936 as roadmaster at Fort Worth, Tex., and subsequently served in the same capacity at Iowa City, Iowa. In 1943 he became district maintenance engineer, with headquarters at Des Moines, Iowa, and later held assignments at Amarillo, Tex., and as roadmaster on the Oklahoma division. Mr. Harrison was advanced to trainmaster at Fairbury, Neb., in 1945, and was transferred in December, 1947, to Pratt, Kan. where he was located at the time of his recent promotion.

A. B. Harrison

FINANCIAL, LEGAL & ACCOUNTING

Thomas W. Davis, general solicitor of the Atlantic Coast Line at Wilmington, N. C., is retiring from active service, effective May 27, at his own request, after more than 55 years of service with the A.C.L. and predecessor companies. **M. V. Barnhill, Jr.,** attorney, has been appointed assistant general solicitor at Wilmington. Effective May 27, division counsel on the Northern division will report through Mr. Barnhill, and special counsel located on the Northern division and at off-line points will report to the vice-president and general counsel. **R. E. Browne, III,** has been appointed attorney.

Mr. Davis was born at Wilmington, on May 27, 1876, and attended Cape Fear Academy in that city and the University of North Carolina. He entered railroad service in 1893 as clerk in the office of the general superintendent of the A.C.L. and served until 1899 as passenger rate clerk, freight rate clerk and chief rate clerk, successively. In 1900 Mr. Davis was admitted to the North Carolina bar and the following year he became local counsel of the Atlantic Coast Line, being appointed division counsel in 1912, assistant general counsel in 1920, and general solicitor in 1922.

George H. Albach, assistant comptroller of the New York Central system, has been appointed comptroller, with headquarters as before at New York. Mr. Albach was born at Chicago in 1892 and was graduated from Chicago Commerce & Law School in 1910. His service with the New York Central began in 1906 as dray ticket clerk at Chicago, being appointed bookkeeper in 1910 and settlement clerk in 1913. In 1919 he became traveling auditor at New York and the following year he was appointed district freight accountant at Cleveland, Ohio, transferring to Chicago in 1921. Returning to New York in 1928 he became assistant auditor of revenue, being appointed supervisor of station accounts in 1932, auditor of station accounts and overcharge claims in 1937, and assistant comptroller in 1941.

John E. Ewalt has been promoted to assistant general real estate agent in the general office of the Pennsylvania at Philadelphia, Pa. Mr. Ewalt, a graduate of the Carnegie Institute of Technology, has been in the service of the P.R.R. since 1936 and in the real estate department since 1939. For the past three years he has been stationed in New York.

TRAFFIC

The headquarters of **R. W. Ohlman,** general passenger agent, Pere Marquette district, of the Chesapeake & Ohio at Detroit, Mich., have been moved to Grand Rapids, Mich.

L. D. Curtiss has been appointed general freight agent, sales and service, of the Belt Railway of Chicago.

W. Gosnell and **V. A. Bowes** have been appointed district passenger agents of the Canadian Pacific at Vancouver, B. C., and Winnipeg, Man., respectively.

H. A. Turner and **O. W. Williams,** general freight and pasenger agents of the Missouri Pacific Lines at Kansas City, Mo., and Little Rock, Ark., respectively, have been appointed assistant traffic managers at those points and their former positions have been abolished.

W. E. Lutz, city pasenger agent of the Chicago, Milwaukee, St. Paul & Pacific at Philadelphia, Pa., has been appointed district passenger agent at that point, and his former position has been abolished.

S. N. Greene has been appointed general passenger, baggage and mail agent, Western region, of the Canadian National at Vancouver, B. C., succeeding **K. E. McLeod,** retired.

Edward A. Ryder, whose appointment as traffic manager of the Atlantic region of the Canadian National at Moncton, N. B., was reported in the *Railway Age* of May 7, page 67, was born in Havelock, N. B. Following employment with the Times Printing Company, at Moncton, he enlisted in the Canadian Army in 1917. On demobilization, he joined the operating department of the Intercolonial (now C.N.R.) in 1920, serving at Moncton and Newcastle, N. B. Transferring to the Montreal offices of the Canadian National in 1924, he served successively in the rate and tariff bureau, foreign freight department and office of the general freight traffic manager. In 1938 Mr. Ryder was appointed chief clerk to the vice-president in charge of traffic, and in 1944 became assistant to the general freight traffic manager. He was appointed assistant to the traffic vice-president at Montreal in August, 1946, which position he held until his recent appointment.

Edward A. Ryder

ENGINEERING & SIGNALING

C. Weiss, supervisor of track, Fort Wayne division, of the Pennsylvania, with headquarters at Valparaiso, Ind., has been appointed assistant engineer, office of chief engineer, maintenance of way, Western Region, at Chicago, succeeding to the duties of **E. D. Flad,** retired.

J. C. Warren has been appointed division engineer of the Pennsylvania-Reading Seashore Lines and of the Atlantic division of the Pennsylvania, with headquarters at Camden, N. J., succeeding **R. S. Stewart,** who has been appointed assistant to the general manager of the Pennsylvania-Reading Seashore Lines at Camden.

GATX GEOGRAPHY

You see GATX tank cars everywhere—207 specialized kinds—carrying petroleum products, fish oils, molasses, lard, sulphuric acid, wines, tung oil and innumerable other bulk liquids to and from every state in the Union. Yet none of the more than 40,000 tank cars in the GATX fleet is ever more than a few hours away from one of General American's completely equipped maintenance shops. Thus General American—builder, operator, lessor of tank cars—keeps the nation's bulk liquids rolling swiftly, safely and economically to their destinations.

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135 South LaSalle Street • Chicago 90, Illinois

GENERAL NEWS

Passenger Deficit

(*Continued from page* 190)

19.9 per cent in the case of gasoline. The 1948 revenue from the latter was 1.8 per cent above that of 1947, the smallest of the percentage increases shown for the commodity groups, although the rise in revenues from l.c.l. was only 0.2 per cent. Meanwhile, the revenue from crude petroleum was up 61 per cent, the largest of the percentage increases. For the 32 selected commodity classes as a whole, the tonnage originated in 1948 was 1.4 per cent below that of 1947, while the revenue was up 12.2 per cent. For the other 230 classes, the respective figures were a decline of 3.8 per cent and a rise of 13.5 per cent; and for all 262 clases, the drop in tonage was 2 per cent while the increase in revenue was 12.7 per cent.

"The increases in revenue for the classes which show less tonnage in 1948 than in 1947," the bureau said, "are presumably due to the rate increases authorized by the commission in Ex Parte No. 166 . . . , the greater part of which became effective during 1948. A portion of the revenue increases for the classes which show more tonnage in 1948 than in 1947 resulted from the rate increases. Average haul per ton of freight originated . . . is estimtaed at 405.86 miles in 1948, as compared with 407.82 in 1947. Consequently, this factor has very little to do with the measure of the increase in total gross freight revenue, although there may have been substantial variations in the average hauls for the individual commodity classes."

Employee Productivity

In another article, the bureau presented a table showing, for the 10-year period, 1939-1948, the total number of employee hours paid for by Class I (line haul) steam roads and the total compensation paid employees in comparison with the number of traffic units handled (revenue ton-miles plus twice the revenue passenger-miles). "The most interesting feature of this table is the definite decline from the war peak in both traffic units per hour paid for and traffic units per dollar of compensation," the bureau said.

"From 1939 through 1943," it continued, "both averages rose uninterruptedly to peaks of 237 and 256 for traffic units per hour paid for and traffic units per dollar of compensation, respectively. From this 1943 war peak of 237 traffic units per hour paid for the average fell to 199 in the first full postwar year of 1946, a decrease of over 16 per cent. Only part of this decrease was recovered in the next two years. Although the average rose to 207 in 1947, it dropped to 203 in 1948. The number of traffic units per hour paid for in 1948, however, were about one-third greater than in 1939.

"With regard to traffic units per dollar of compensation, the situation was less favorable. This average declined uninterruptedly from 1943 through 1948, the 152 units per dollar in this last year representing a decline of over 40 per cent from the 256 in 1943 and over 25 per cent from the 203 in 1939. This large and uninterrupted decline is attributable partly to increases in wage rates and other compensation. The total compensation of employees increased each year since 1939, reaching a peak of about $4,730 million in 1948 or 153.9 per cent above the 1939 level. In comparison the number of employees-hours paid for increased only 42.5 per cent and the number of traffic units only 90.3 per cent."

With reference to the employment situation on the railroads, the bureau noted thatt he mid-March total of 1,195,289 employees was the lowest of these monthly totals since March, 1942. The monthly figures back to January, 1948, were then set out, and the bureau commented on them as follows: "Railway employment dropped substantially each month after July, 1948, the peak month for that year, through March, 1949. The April, 1949, employment increased somewhat but it was below the level of all months in 1948 and of January and February, 1949."

Reviewing railway financial results for this year's first quarter, the bureau made comparisons with last year and with 1941. The quarter's net railway operating income, $128.4 million, was 10 per cent below the comparable 1948 figure and

THE GREATEST MARKING ADVANCE IN 100 YEARS OF RAILROAD HISTORY

The PRISMO process of reflectorization, used throughout the world on highways and airports, is now making markings on rolling stock visible 'round the clock—24 hours a day!

PRISMO is speedily and economically applied through the vertical application method. Millions of tiny crystal-clear PRISMO SPHERES, embedded in the special PRISMO PLASTIC BINDER, reflects light at the widest angle of sight . . . for the longest time!

Now—hump readings are speeded up at freight transfer points.

Efficiency in switching and shifting is greatly increased.

The average life of PRISMO under normal use is five to seven years.

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You see GATX tank cars everywhere—207 specialized kinds—carrying petroleum products, fish oils, molasses, lard, sulphuric acid, wines, tung oil and innumerable other bulk liquids to and from every state in the Union. Yet none of the more than 40,000 tank cars in the GATX fleet is ever more than a few hours away from one of General American's completely equipped maintenance shops. Thus General American—builder, operator, lessor of tank cars—keeps the nation's bulk liquids rolling swiftly, safely and economically to their destinations.

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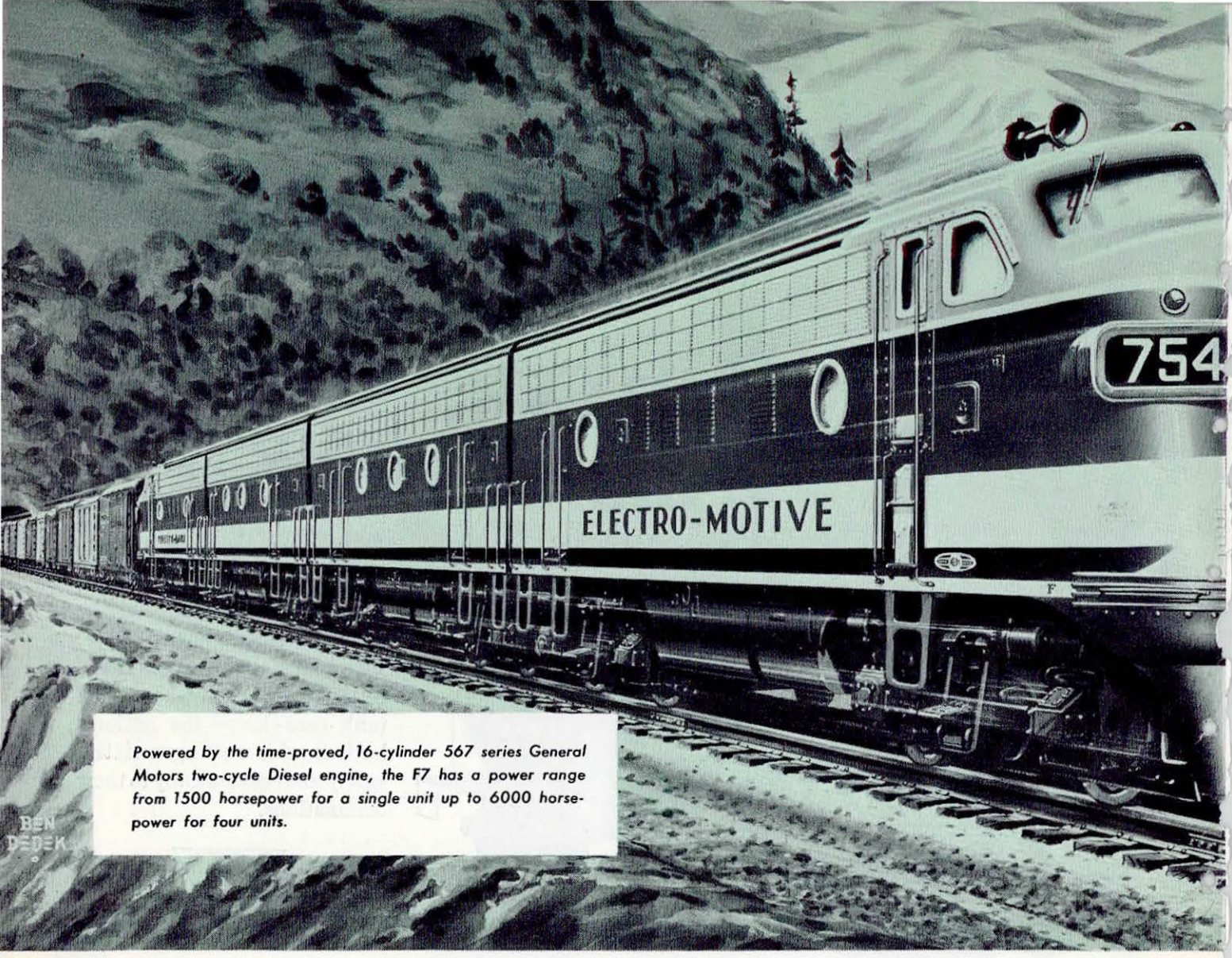


Powered by the time-proved, 16-cylinder 567 series General Motors two-cycle Diesel engine, the F7 has a power range from 1500 horsepower for a single unit up to 6000 horsepower for four units.

THE GENERAL MOTORS F7

A great new contribution to freight progress

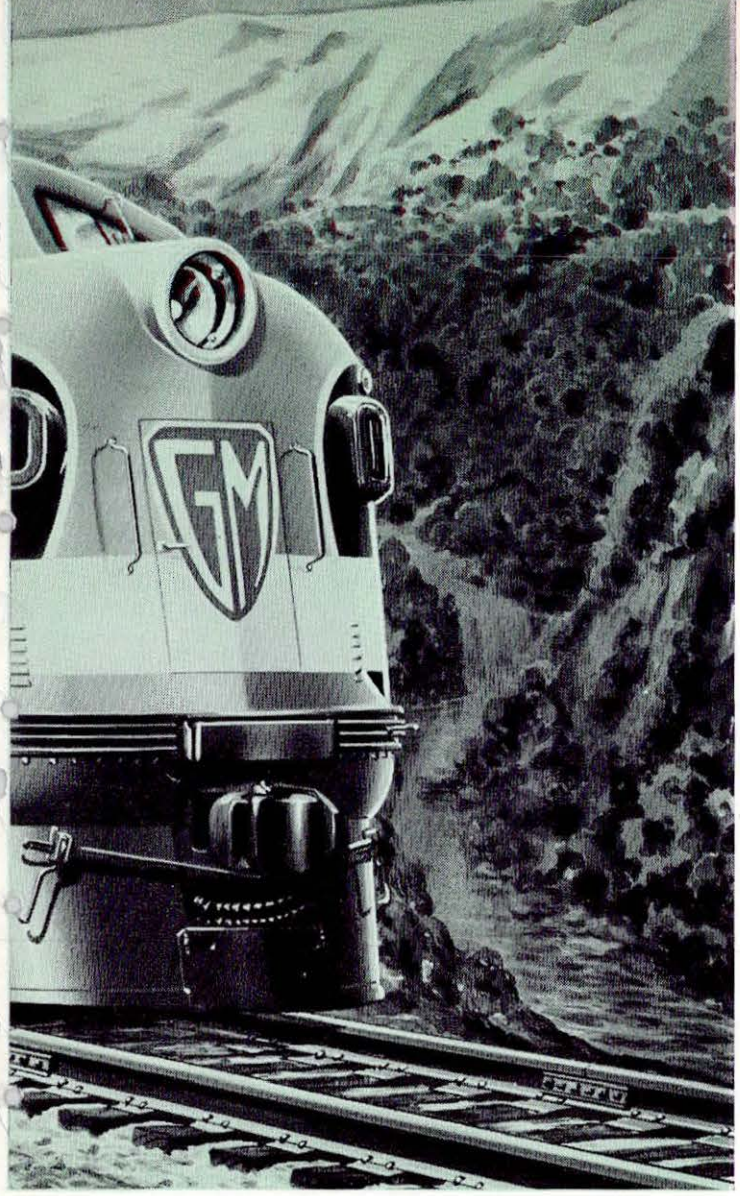
SINCE 1940, when Electro-Motive pioneered the first Diesel road freight, the ability of General Motors locomotives to do *more* work *faster* and at *lower cost* has been fully demonstrated in the handling of more than 800 billion gross ton-miles of freight.

Out of this broad experience has come a new and even greater locomotive — the General Motors F7 — worthy successor to the far-famed F3 series of freight and heavy-duty passenger locomotives.

The F7 offers railroads all the proved advantages of Electro-Motive design plus a vast accumulation of new and advanced features. Traction motors have been redesigned for greater capacity and longer life. A new fuel injector has been developed to permit use of lower cetane fuel. Dynamic braking capacity has been increased. Engine-room ventilation has been improved, boiler water piping rearranged and more efficient steam generators made available to improve cold-weather operation.

These are just a few of the high lights. Many of these developments have been in regular production for months. Many more are now incorporated.

It is in a spirit of worth-while accomplishment that Electro-Motive presents the F7—a locomotive which will achieve new levels of performance in both freight and passenger service, and with even greater savings than have been credited to General Motors locomotives heretofore.



In freight service the new F7 will haul 25% more tonnage on a 1% grade at continuous ratings and up to 33% more tonnage at short-time ratings for two hours. And it offers many other features which add up to improved freight service.

IMPROVED TRACTION MOTOR ***Greater Capacity — Longer Life*** Increased tonnage ratings are achieved by heavier power cable and the new Electro-Motive-developed traction motor which features inorganic insulation and more effective cooling. This permits an increase in traction motor ratings of as much as 25% with no increase in temperature rise and with substantial increase in motor life.

AUTOMATIC TRANSITION STANDARD

To avoid the possibility of operating errors causing damage to traction motors and generators, Automatic Transition is provided as *standard equipment* on the F7. Where manual operation is desirable, controls are so designed that the automatic circuits can be cut out.

INCREASED DYNAMIC BRAKING

Increased traction motor capacity is utilized to produce a 23% increase in dynamic braking energy which permits control of heavier tonnage.

BROADER FUEL RANGE

The new Electro-Motive fuel injector operates on fuel of 40 *cetane* rating with less combustion shock and lower cylinder pressures than the old injector with a 55 cetane fuel. Result—broader fuel range and in some cases lower fuel costs.

LOWER MAINTENANCE COSTS

A number of improvements in the F7 provide for greatly simplified maintenance, lower repair costs and longer, trouble-free life. Among others, they include:

INORGANIC insulation in traction motor armature and field coil is not subject to shrinkage or burning, thereby assuring longer life.

Complete separation of engine-room air from engine and dynamic brake-cooling air, and 100% filtration of engine-room air guards against the entrance of dirt and snow.

Recirculation of main generator air and closing off of discharge through under underframe also helps to keep out dirt and snow, and will raise engine-room temperature during winter operation.

New dynamic brake-cooling design in which a single DC motor and a fan similar to the new engine-cooling fan replaces four blowers.

Improved arrangement of air-brake equipment for easier, quicker accessibility.

Improved intercooling and filtering of compressed air lessens chance of air-line freeze-ups.

All of these improvements — plus increased water supply and reserve steam generator capacity — are included in the new FP7-A for heavy-duty passenger service.

ELECTRO-MOTIVE

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GENERAL MOTORS LOCOMOTIVES

GENERAL NEWS

Passenger Deficit

(*Continued from page* 190)

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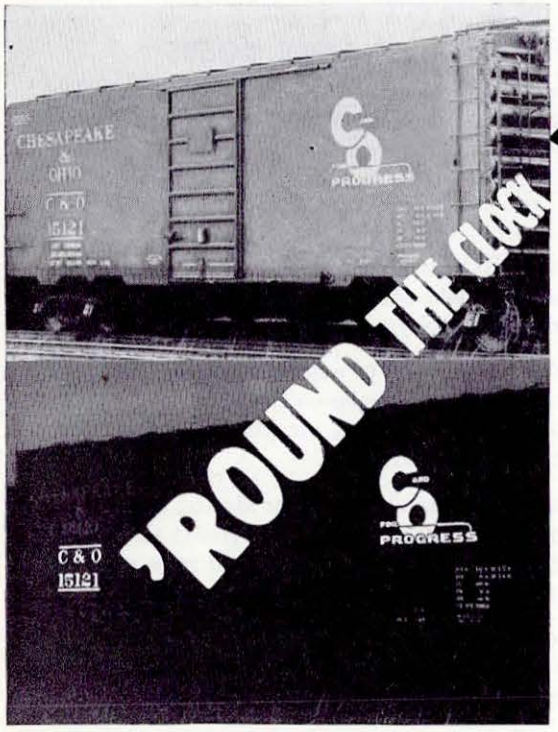

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35.9 per cent under 1941, while the estimated net income, $59 million, was off 21.3 per cent and 15 per cent, respectively. This "relatively small" decline of 15 per cent in net income as compared with the first quarter of 1941 "is due primarily to a decrease of about $53 million in the carriers' fixed charges," the bureau pointed out.

The territorial figures showed that the net railway operating income in each of the territories was substantially below that of 1941's first quarter, while the net income was also down in all territories except the Western district. That district's estimated net income for this year's first quarter was $11,000,000; it reported a deficit of $4,752,000 for the first quarter of 1941.

Toll Road Authorized For New Jersey

A six-lane toll highway, costing approximately $150 million, and extending 130 mi. from Alpine, N. J., in Bergen county, near New York City, to Deepwater, at the southwestern border of the state, is scheduled for operation within two years, according to an estimate by the newly created New Jersey Turnpike Authority.

Feeder roads are planned to connect the new route with the Holland and Lincoln tunnels and the George Washington bridge, thus providing direct access between the new road and New York City, existing toll parkways in Westchester county, N. Y., and Connecticut's Merritt Parkway — a toll road for passenger vehicles only extending from the New York state line nearly to New Haven. Eventually, the New Jersey turnpike also is expected to have an access road connecting with an extension of the Pennsylvania turnpike now under construction between Carlisle and the vicinity of Philadelphia. Tentative plans for the new road call for a 500-ft. right-of-way and a 70-m.p.h. speed limit. Construction costs at some points, e.g., across the Jersey meadows, are expected to approximate $1,500,000 per mile.

Truckers to Join T.A.A. Transport Panel Plan

The executive committee of American Trucking Associations, at a meeting in Washington, D. C., last week, voted to accept the invitation of the Transportation Association of America to form a "panel" representative of the trucking industry.

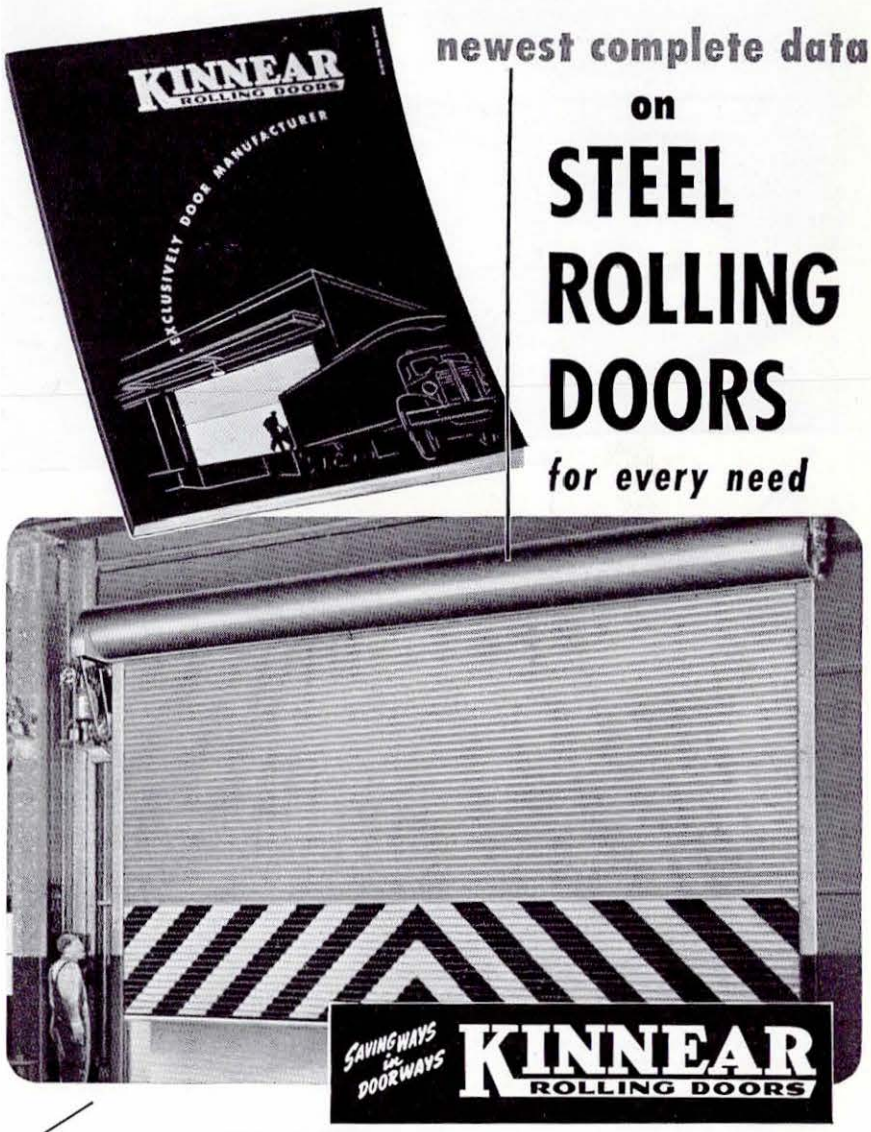
The A.T.A. announcement said that the invitation had been accepted "with the understanding that T.A.A. has abandoned its advocacy of integration of all types of transportation into a limited number of huge corporations." The trucking-industry panel will be the seventh to participate in the T.A.A.'s program to formulate proposals for solution of current transportation problems, other panels having already been organized by other forms of transportation and by investor and user interests.

Among other actions of the A.T.A. executive committee was its adoption of a position in opposition "to any attempt to assess highway construction costs or to tax motor vehicles on a ton-mile basis." In that connection, the committee directed the A.T.A. management to add to its staff a "qualified highway engineer," whose duties will be "to provide the trucking industry with technical information on highway construction that has not heretofore been available to it."

1948 Fourth-Quarter Loading Estimates 4.9 Per Cent High

The 13 Shipper Regional Advisory Boards overestimated carloadings for the fourth quarter of 1948 by 4.9 per cent, according to the latest comparison of forecasts with actual loadings issued by Arthur H. Gass, chairman of the Car Service Division, Association of American Railroads. The range of overestimates by individual boards was from the Southeast's 0.9 per cent to the Pacific Coast's 16.9 per cent, while only one board—the Northwest—turned in an underestimate, of 0.04 per cent.

Variations of estimates from actual loadings by commodities ranged from an overestimate of 22.3 per cent for citrus fruits to an underestimate of 20.2 per cent for potatoes. There were overestimates in 21 commodity groups and underestimates in 11. In addition to that or



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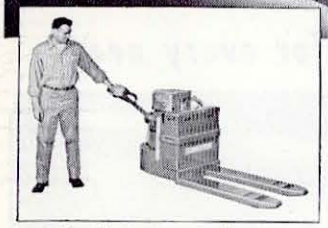
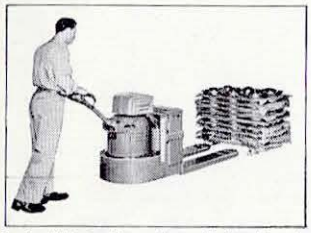


Control handle swings on 200° steering arc.



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citrus fruits, the larger overestimates were 18.9 per cent on machinery and boilers, 14.6 per cent on poultry and dairy products, 13.9 per cent on salt, 13.2 per cent on hay, straw and alfalfa, and 12.6 per cent on fertilizer. The larger underestimates, in addition to that on potatoes, were 15.8 per cent on frozen foods, fruits and vegetables and 12.3 per cent on cotton seed, soybean-vegetable cake and meal, excluding oil.

COMPARISON NATIONAL FORECAST WITH ACTUAL LOADINGS—FOURTH QUARTER 1948

Board	Carloadings Fourth Quarter 1948 Estimated	Actual	Percentage of Accuracy Over Est.	Under Est.
Central Western	352,692	317,177	10.1	
Pacific Coast	433,274	360,113	16.9	
Pacific Northwest	272,298	265,592	2.5	
Great Lakes	595,009	578,023	2.9	
Ohio Valley	1,073,623	1,031,598	3.9	
Mid-West	1,025,541	989,339	3.5	
Northwest	581,796	582,047		0.04
Trans-Mo-Kansas	460,350	444,731	3.4	
Southeast	964,193	955,781	0.9	
Southwest	605,969	577,736	4.7	
New England	155,889	136,812	12.2	
Atlantic States	926,437	890,384	3.9	
Allegheny	1,219,393	1,113,101	8.7	
Totals	8,666,464	8,242,434	4.9	

Plan Joint Chicago Rail-Motor Bureau to Cut Freight Losses

A plan currently being discussed by representatives of Chicago railroads and motor carriers proposes the formation of a joint over-short-damage bureau to facilitate the return of misdirected freight to the proper carrier. Forrest Bennett, freight claim agent of the Chicago Indianapolis & Louisville, points out that a considerable amount of over-and-short freight, of both the highway carriers and local cartage contractors, could be matched with that of the railroads through the interchange of over-and-short reports via a central bureau. he observed that the loss of entire package l.c.l. freight on the rail carriers alone amounted to $7,035,195 in 1948.

National Airport Plan Involves Expenditure of $216,000,000

Construction or improvement of 1,034 airports, at a total public expenditure of $215,879,675, is contemplated in the so-called National Airport Plan for 1949, as outlined in a booklet bearing that title, recently issued by the Civil Aeronautics Administration of the Department of Commerce.

Of the total cost, $103,538,104 is to be paid by the federal government, and $112,341,571 by the local or state authorities sponsoring the individual projects. Thirteen of the programmed airports are in various territories; the 1,021 within continental United States include 319 of class 1, 235 of class 2, 215 of class 3 and 252 of class 4 or larger. Classifications are determined by the length of the longest usable landing strip; generally, classes 1 and 2 are intended for feeder service, class 3 for truck line and express service, and class 4 and larger for continental and intercontinental service. Nearly 60 per cent of the total contemplated federal expenditure will be on ports of the fourth and higher classes, with only about 40 per

cent being allocated to those of the first three classes.

"There are many instances," the booklet states, "where several distinct 'projects' result from a single tentative allocation. Thus, as of December 31, 1948, while the program consisted of 1,034 tentative allocations for airports, it included 1,242 projects. . . . Grant offers had been authorized . . . for 608 in the amount of $62,865,681 . . . 536 had been accepted by the sponsors and thus became 'grant agreements.' . . . Of the 536 grant agreements, 491 were either under construction or had been completed. Of these 491 projects, 189 had been completed, 161 of which involved construction, while 28 involved the acquisition of land alone. . . . Of the 302 projects under construction . . . 61 were from 1 to 33 per cent complete, 55 were from 34 to 66 per cent complete, and 186 were from 67 to 99 per cent complete."

A grant offer, the booklet explains, is an offer to the sponsor or sponsors of an airport project to pay the United States' share of the allowable costs of the project; while a grant agreement is an acceptance of such an offer.

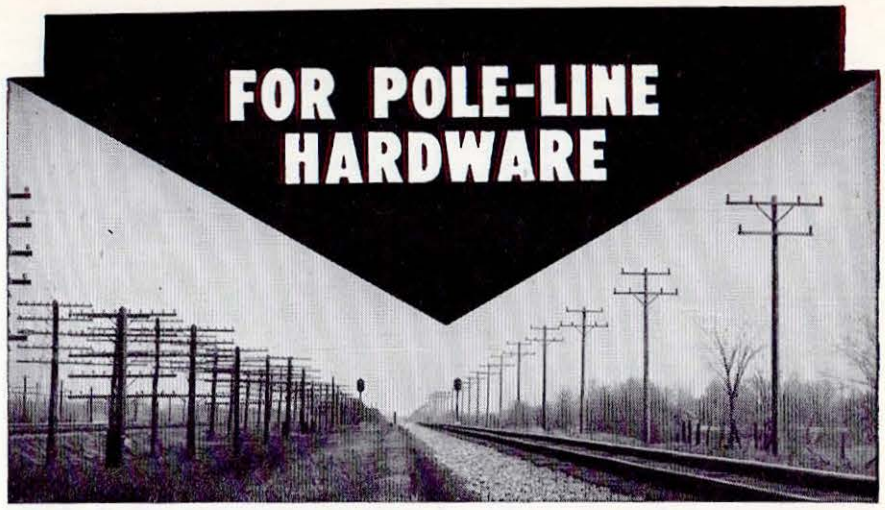
Railroad Employees Targets For Communist Agitators

A backhanded compliment to the railroad industry's essential place in the country's peacetime economy, and in its emergency defense, is contained in recently-revealed evidence to the effect that Communist leaders are teaching their party members that they must "control" railroad employees in order to produce a successful revolution.

Evidence along that line was produced last week in New York by Thomas A. Younglove, of St. Louis, Mo., who has spent four years in the Communist movement as an undercover agent for the Federal Bureau of Investigation, and who appeared as a government witness at the current trial of 11 leading American Communists who are accused of conspiracy to teach and advocate overthrow of the government by force and violence.

In June, 1946, Mr. Younglove testified, he attended a secret party meeting at its Missouri state headquarters in St. Louis, at which one Otto Wangerin, described as "the party's railroad organizer," urged all party members to get behind "concentration" in the railroad industry. "Wangerin quoted Lenin," the witness added, "as saying we could never hope to have a successful revolution without having the railroad workers with us." The object of the 1946 "concentration" drive, Mr. Younglove said, was to recruit 20,000 employees in key industries throughout the country; the quota for Missouri was 250, divided among the railroad, electrical, shoe, packing and automobile industries, and Negro, youth, veteran and professional organizations. He also named one Douglas MacLeod, described as a St. Louis attorney, as a "lecturer" at a secret Communist party school in St. Louis, where "violent action" was advocated.

Mr. Younglove's statements about the



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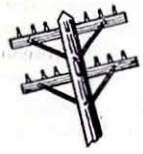

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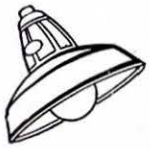

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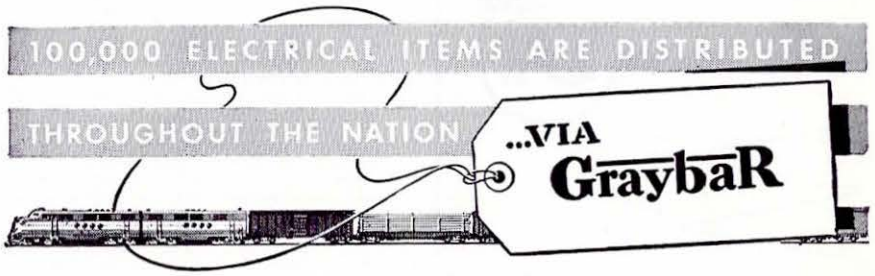

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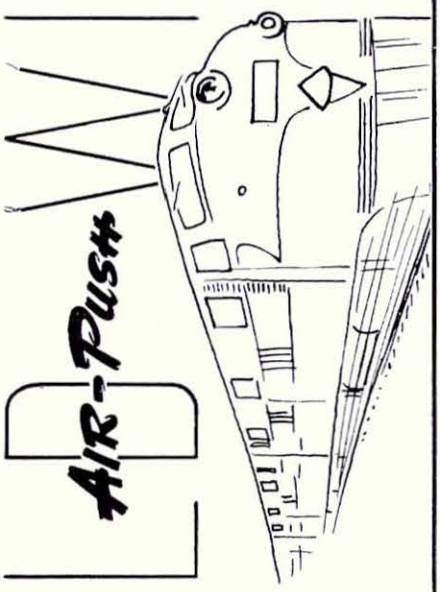

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Communists' desire to "control" railroad employees followed testimony presented at the trial by Angela Calomiris, of New York, also an F. B. I. agent, who stated that party members in New York were frequently ordered to "work" along the waterfront in an effort to enlist the sympathy and support of railroad and dock employees. The "work" consisted, among other things, Miss Calomiris said, of distributing Communist literature and attempting to enroll dock and railroad employees in the Communist party.

On the first Tuesday of each month, the Daily Worker, Communist propaganda "newspaper" printed in New York, publishes a Railroad Workers' Page, which, maintaining the character of the rest of the paper, consists entirely of one-sided, inflammatory reports of comparatively insignificant bits of railroad news, magnified out of all proportion to their true importance. Material printed on this page seems to be written in the hope of antagonizing railroad rank-and-file employees not only against the railroad companies and their executives, but also against the offices of the responsible railroad brotherhoods, who are accused, on one such page, of "running away from the struggle" and signing "a libelous document."

March Accident Statistics

The Interstate Commerce Commission has made public its Bureau of Transport Economics and Statistics' preliminary summary of steam railway accidents for March and this year's first three months. The compilation, which is subject to revision, follows:

Item	Month of March 1949	Month of March 1948	3 months ended with March 1949	3 months ended with March 1948
Number of train accidents*	753	1,055	2,505	3,482
Number of accidents resulting in casualties	43	52	122	208
Number of casualties in train, train-service and nontrain accidents:				
Trespassers:				
Killed	83	100	231	275
Injured	82	81	209	209
Passengers on trains:				
(a) In train accidents*				
Killed	—	—	—	14
Injured	30	51	135	378
(b) In train-service accidents				
Killed	2	2	5	6
Injured	157	232	496	640
Travelers not on trains:				
Killed	—	—	1	2
Injured	57	74	199	281
Employees on duty:				
Killed	36	51	110	170
Injured	1,907	2,704	6,074	8,597
All other nontrespassers:**				
Killed	139	154	421	452
Injured	476	545	1,687	1,931
Total—All classes of persons:				
Killed	260	307	768	919
Injured	2,709	3,687	8,800	12,036

* Train accidents (mostly collisions and derailments) are distinguished from train-service accidents by the fact that the former caused damage of more than $250 to railway property in 1948. Beginning January 1, 1949, this minimum was raised to $275. Only a minor part of the total accidents result in casualties to persons, as noted above.

**Casualties to "Other nontrespassers" happen chiefly at highway grade crossings. Total highway grade-crossing casualties *for all classes of persons, including both trespassers and nontrespassers*, were as follows:

Persons:				
Killed	122	140	392	419
Injured	336	343	1,179	1,226

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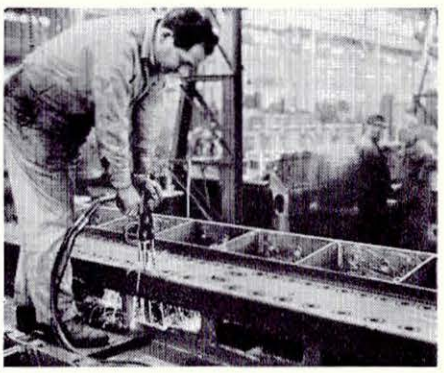

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CURRENT PUBLICATIONS

BOOKS

The Basing-point System; An Economic Analysis of a Controversial Pricing Practice, by Fritz Machlup. 270 pages. Published by the Blakiston Company, 1012 Walnut st., Philadelphia 5, Pa. $5.

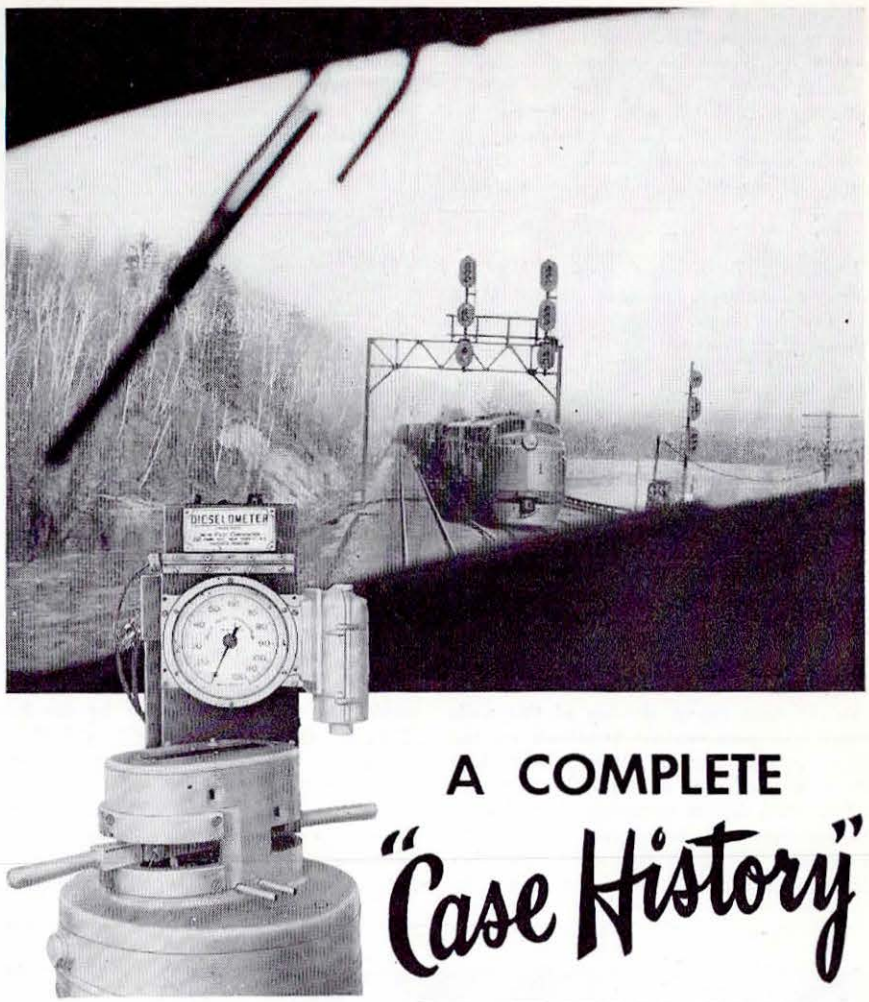
This book gives a description of the basing-point system and its operation; tells the story of the development of the system and of its bouts with the antitrust laws; examines the arguments about its alleged monopolistic and discriminatory nature; analyzes the economic consequences of the pricing practice, and concludes with a theoretical evaluation of the cost of abolishing the system.

Centennial History of the Pennsylvania Railroad Company, 1846-1946, by George H. Burgess and Miles C. Kennedy. 835 pages, illustrations, maps. Published by the Pennsylvania Railroad, Philadelphia, Pa. Available at Union News Company stands in the principal stations on the railroad and at Doubleday & Co. book stores. $3.50

This volume is a product of a comprehensive engineering study of the origins and development of the Pennsylvania, conducted by the engineering firm of Coverdale & Colpitts, both the authors being members of that firm. The book is divided into 10 parts, the first, "Background and Beginnings," covering the formative and early construction period, including the administrations of the first two presidents, Samuel V. Merrick and William C. Patterson, and carrying the story down to 1852. The nine ensuing parts cover successively the administrations of J. Edgar Thomson, Thomas A. Scott, George B. Roberts, Frank Thomson, Alexander J. Cassatt, James McCrea, Samuel Rea, W. W. Atterbury and M. W. Clement, down to the end of World War II. The appendices include data on rolling stock, dividends, officers and directors, financial statistics, and employees and payrolls.

Wartime Production Controls, by David Novick, Melvin Anshen and W. C. Truppner. 441 pages. Published by Columbia University Press, 2960 Broadway, New York 27. $6.

This book presents a critical appraisal of the techniques of production control devised and administered by the War Production Board and its predecessor agencies from 1940 to 1945. It concentrates on a detailed analysis of the methods and procedures by which the wartime administration of the industrial economy of the United States was conducted. From the review of what was actually done during the war years, it attempts to distill the lessons of experience to provide an adequate framework for any future emergency requiring similar government action, and to recommend a course of action designed to enable this country to discharge its responsibilities for national defense and world security. In doing this, the book provides criteria for the objective evaluation of the National Security Act of 1947 and any further legislation which may be recommended in the interests of national security. It does not treat administrative



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problems which were the prime responsibility of agencies other than the War Production Board and its predecessors, and it does not cover questions involved in the operating control of manpower, transportation, prices, or that segment of rationing to ultimate consumers which was the responsibility of the Office of Price Administration.

Virginia & Truckee; A story of Virginia City and Comstock Times, by Lucius Beebe and Charles Clegg. 63 pages, illustrations. Published by Grahame Hardy, 2046 E. 14th st., Oakland, Cal. Price, $2.

An historical sketch of the Virginia & Truckee, celebrated and glamorous short line of the old American West, built to serve Virginia City and the Comstock Lode. It is also the story of a number of places and people related to the road's origins, operations and destinies.

Rail Defect Manual. Compiled by Sperry Rail Service for the Use of the Railroads. Fourth edition. 52 pages, 70 illustrations. Published by Sperry Products, Inc., Danbury, Conn.

In the most recent revision of this well-known and authoritative handbook on the origin, rate of growth, external indications and hazards of each of the various internal and external defects occurring in steel rails, the text has been completely rewritten to incorporate the latest details of rail-defect classification and data accumulated since the publication of the third edition in 1942. It also includes interesting supplementary chapters on the history of rails and railroads, the development of rail-testing programs, and on rail breaking as a check on testing methods.

PAMPHLETS

Pay Dirt. 18 pages, illustrations. Published by the Industrial Development Service, Atlantic Coast Line, Wilmington, N. C. Free.

Outlines opportunities for agriculture, grazing and dairying in the Everglades area of Florida, and discusses the importance of the Atlantic Coast Line to that area.

Tests for Truth; Truth vs. Myths About Profit, by George H. Cless, Jr. 27 pages. Distributed by the Eddy-Rucker-Nickels Company, Harvard square, Cambridge, Mass. 50 cents.

"When a firm makes a profit," says Mr. Cless, "it does so only because there have been enough customers who were willing and able to exchange their dollars for the goods and services produced by the firm. When a firm makes $100 profit, or $100 million profit, it does so only because its customers (*you*) voted their dollar ballots for it to do so. When . . . a few people take it upon themselves to declare the election null and void, they not only insult the intelligence of every citizen, but they challenge the basic freedom of every citizen—the freedom of choice.

"Profit," Mr. Cless continues, "one of the costs of doing business, is payment of the use of the tools of production." Mr. Cless describes "tools" as everything used in production of goods and service. "This payment is the incentive to save and invest, and thus becomes the source of more tools, on which depends more jobs for the production of more and better goods."

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The purchasing power of corporate profits, whether used for dividends or to purchase new tools, has declined just as much or more than the purchasing power of other dollars, Mr. Cless points out.

The author shows that the allegedly high profits of 1947 are a myth as respects available cash. Ninety per cent of 1947 profits were spent for new tools, and it was this spending which provided the sales, and subsequently the payrolls for labor, in the industries. To reduce profits by price regulation and rationing, simply will amount to reducing the annual payrolls for industry's labor.

The Economies of Hardfacing. 8 pages, illustrations. Issued by the Air Reduction Sales Company, 60 E. 42nd st., New York.

This pamphlet is a reprint of an article which appeared originally in The Welding Journal. It reviews the advantages of hardfacing, presents an analysis of the problems leading to the correct selection of proper hardfacing rods, includes design data and cost figures, and presents a selected bibliography.

Minnesota's Railroads; Their Part in the Development of the State. 4 pages. Published by the Association of American Railroads, Transportation Building, Washington 6, D. C. Free.

In addition to a brief history of the railroads of the state, this folder contains a map showing the railroads operating in Minnesota, together with their names, the addresses of their main offices, and the names of their public relations officers.

Government Ownership and Operation vs. Private Ownership and Operation of Railroads in the United States. 16 pages. Published by the Association of American Railroads, Transportation Building, Washington 6, D. C. Free.

Outlines briefly the effect of government operation upon the railroads, the government, the economic order and the citizen. The remainder of the pamphlet gives the views of the late Joseph B. Eastman and of Herbert Hoover, both statements being made before World War II so that neither had the benefit of the practical demonstration of the difference between private and government operation which the experience

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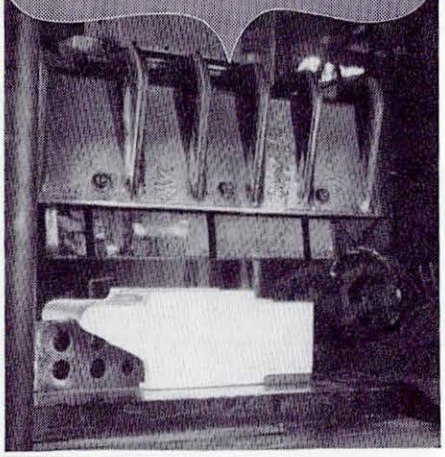


✓ SAVE ON WEIGHT!
✓ ELIMINATE MACHINING!

Get the perfect fit of machined bolster center fillers *without* machining. Get the same accurate dimensions—the squareness—the uniformity—with CONTINENTAL Hot Die Pressed Bolster Center Fillers. Save on the metal loss and labor of machining . . . specify the lighter weight Continental die pressed steel casting!

A.A.R.
ALTERNATE
STANDARD

Continental
FOUNDRY & MACHINE CO.
CHICAGO · PITTSBURGH
Plants at:
East Chicago, Ind.; Wheeling, W.Va.; Pittsburgh, Pa.

of the two wars afforded; and the views of William T. Faricy, taking account of the contrast in results between private operation in the second World War and government operation in the first.

TRADE PUBLICATIONS

How Steel Is Made—As Told by Inland Steel Company. 64 pages, illustrations. Published by the Inland Steel Company, 38 S. Dearborn St., Chicago 3.

A booklet, liberally illustrated with sketches, diagrams and photographs, describing the many phases of modern steel production—from the mining of the raw materials to the finished product. Written in non-technical language, interesting and intelligible, yet authentic and comprehensive, the booklet is intended primarily for the layman—executives who buy and use steel, those who fabricate steel, engineering students and others to whom steel making is of interest.

Dravo "Counterflo" Heater Case-Study Report. 2 pages, illustrations. Published by the Dravo Corporation, Dravo Building, Pittsburgh, Pa.

A complete report on the application and operation of Dravo Counterflo heaters in the Diesel maintenance and repair shop of the Detroit & Mackinac at Tawas City, Mich.

Pole Buyers' Guide—An Informative Guide for Users and Purchasers of Poles. 18 pages, illustrations. Published by Koppers Company, Inc., Koppers Building, Pittsburgh 19, Pa.

A technical bulletin containing service records, electrical-resistance information, and comparative cost figures of pressure-creosoted poles; specifications for all species of poles; manufacturing requirements for bark removal, sawing, trimming, framing and marking. It also describes the treating facilities available at Koppers' 22 treating plants.

Standard Buildings by Luria. 20 pages, illustrations. Published by the Luria Engineering Corporation, 500 Fifth ave., New York 18.

A booklet which presents the design features, specifications and applications of the three standard types of Luria buildings—the clear-span, rigid-frame type, available in widths ranging from 40 ft. to 100 ft.; the center-column type, available in 50-ft. to 100-ft. widths; and the clear-span, rigid-frame type with crane runway, available for crane spans ranging from 40 ft. to 80 ft.

Tie Ties Tighter with Teco Clamping Plates. 4 pages. Published by the Timber Engineering Company, 1319 Eighteenth st., N. W. Washington 6, D. C.

A folder explaining the use of two types of clamping plates for fastening ties and guard timbers on open-deck bridges. It cites the experience of a large midwestern railroad which installed Teco clamping plates on one track of a double-track bridge to compare their performance with conventional lag-screw fastenings used on the other track.

Papers in different colors for Teletype equipment
Route your Teletype equipment papers directly to the interested department . . . different colors for each department.
Link papers, in all colors, are available for every type of communication machine. Dependable quality and equally dependable deliveries.
Link Paper Company
220 BROADWAY ▲ NEW YORK 7, N. Y.

Lehigh Valley's

MODERN EQUIPMENT *Keeps 'em Rolling!*

All main line Lehigh Valley *passenger* trains are completely Diesel-powered . . . Diesel-Electric switchers are used in all major yards and terminals . . . Equipment is being consistently serviced and modernized in Lehigh Valley's progressive program to meet fully today's demand for fast, efficient shipping.

SHIP VIA THE *Strategic* ROUTE BETWEEN THE

Diesel Freights

MEAN *BETTER-THAN-EVER* SERVICE TO SHIPPERS

All of Lehigh Valley's "symbol" freight trains in regularly-scheduled service between New York Harbor and the Niagara Frontier, are now powered by mighty four-unit, 6,000 H.P. Diesel-Electric locomotives.

With this modern power, one continuous operation is achieved for these crack trains, over the entire length of the Lehigh Valley Railroad. Neither a change of locomotives en route, nor "double heading" over mountainous terrain, is now necessary. Dynamic braking makes possible the handling of heavy freights on grades with excellent control, resulting in smoother operation and less chance of damage to lading and equipment.

These and other Diesel-derived operating efficiencies permit faster freight schedules and more dependable service to shippers than ever before.

LEHIGH VALLEY
Railroad
THE ROUTE OF THE BLACK DIAMOND

AT LAKES AND THE ATLANTIC

21, 1949

3,151 REASONS

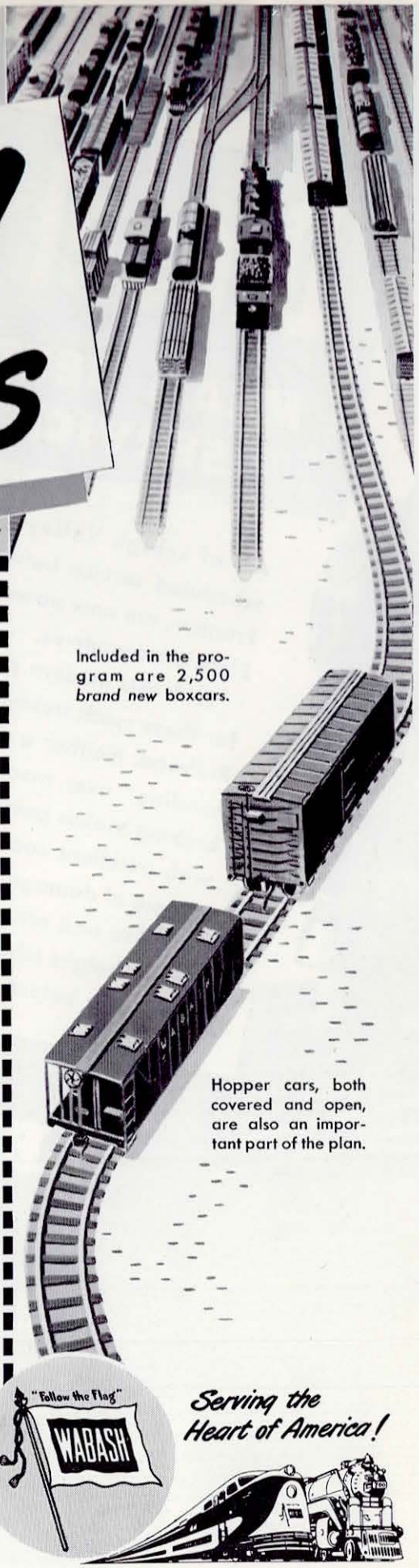
why WABASH can promise you superior freight service

Between 1948 and 1951, Wabash Railroad will have purchased or built 3,151 freight cars of a variety of types—3,151 reasons why Wabash can promise you superior freight service.

Whether or not your freight originates on the Wabash, the strategic location of the Wabash in the "Heart of America" offers you finer freight service. Wabash "highballs" your freight between East and West... and serves you equally well between North and South.

There's a Wabash freight representative near you. Phone him for the details of how Wabash can best serve *you.*

P. A. SPIEGELBERG
Freight Traffic Manager
St. Louis 1, Mo.



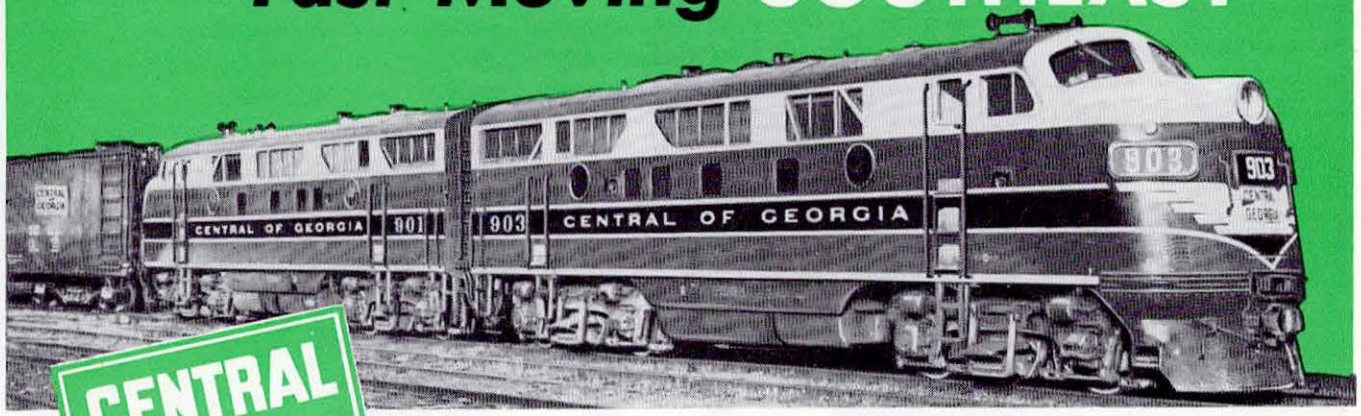
Included in the program are 2,500 *brand new* boxcars.

Hopper cars, both covered and open, are also an important part of the plan.

Serving the Heart of America!

WABASH RAILROAD

MORE DIESEL POWER–*Improved Terminal Facilities for the Fast Moving* SOUTHEAST



CENTRAL OF GEORGIA

The Central of Georgia is keenly alive to the needs of its shippers in the busy territory it serves. You see evidence of this on all sides. During the last year for instance, five more freight road Diesels were added to its fleet, bringing the Central's total of road and switching Diesels available for freight use to 32. And more are on order.

The comprehensive waterfront terminal facilities at Savannah have been modernized for more efficient handling of export and import freight. Shippers are benefiting by other recent Central of Georgia improvements including heavier rail, improved communications and a coordinated rail-truck service for l.c.l. freight. To these modern facilities, add the loyal, competent services of a closely-knit organization and you have the perfect recipe for getting freight moved in a hurry. The Central of Georgia offers overnight service between most points on the entire railway.

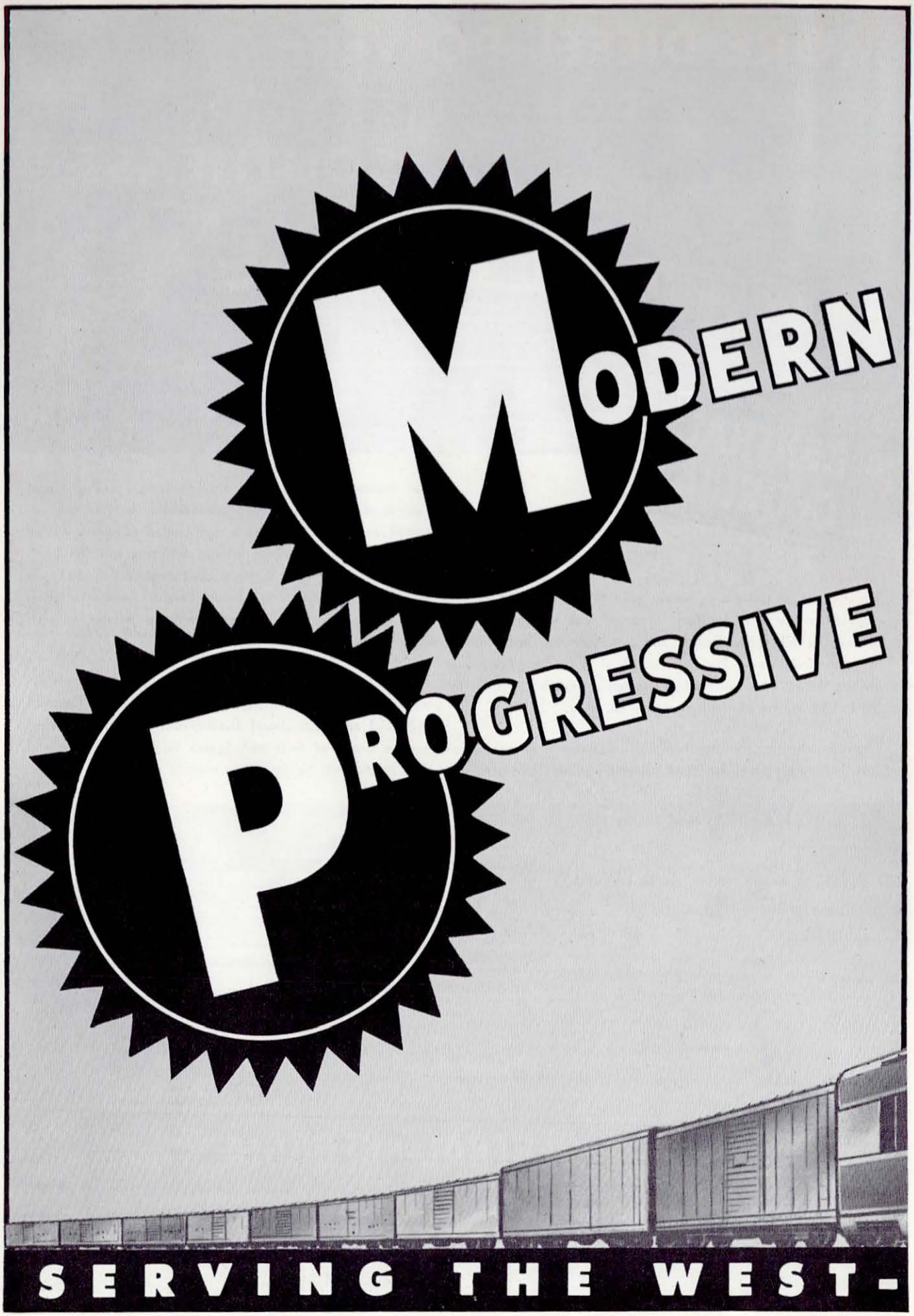
Industrial expansion in the opportune Southeast continues upward. Draw upon the friendly, helpful services of the Central's Industrial and Agricultural Development Departments. They have a wealth of facts and figures for your guidance and your inquiry will be treated as entirely confidential.

Waterfront Terminal Facilities of Central of Georgia Railway and Ocean Steamship Co., Savannah, Georgia.

CENTRAL OF GEORGIA *Railway*

SAVANNAH, GEORGIA

A GOOD FRIEND ALL ALONG THE LINE


MODERN
PROGRESSIVE
SERVING THE WEST-

MISSOURI
PACIFIC
LINES
SOUTHWEST EMPIRE

GREAT NORTHERN spells SERVICE the modern way...

D-I-E-S-E-L

Freight shipments over Great Northern are moved more efficiently and safely these days because of the extensive use of diesel-electric power.

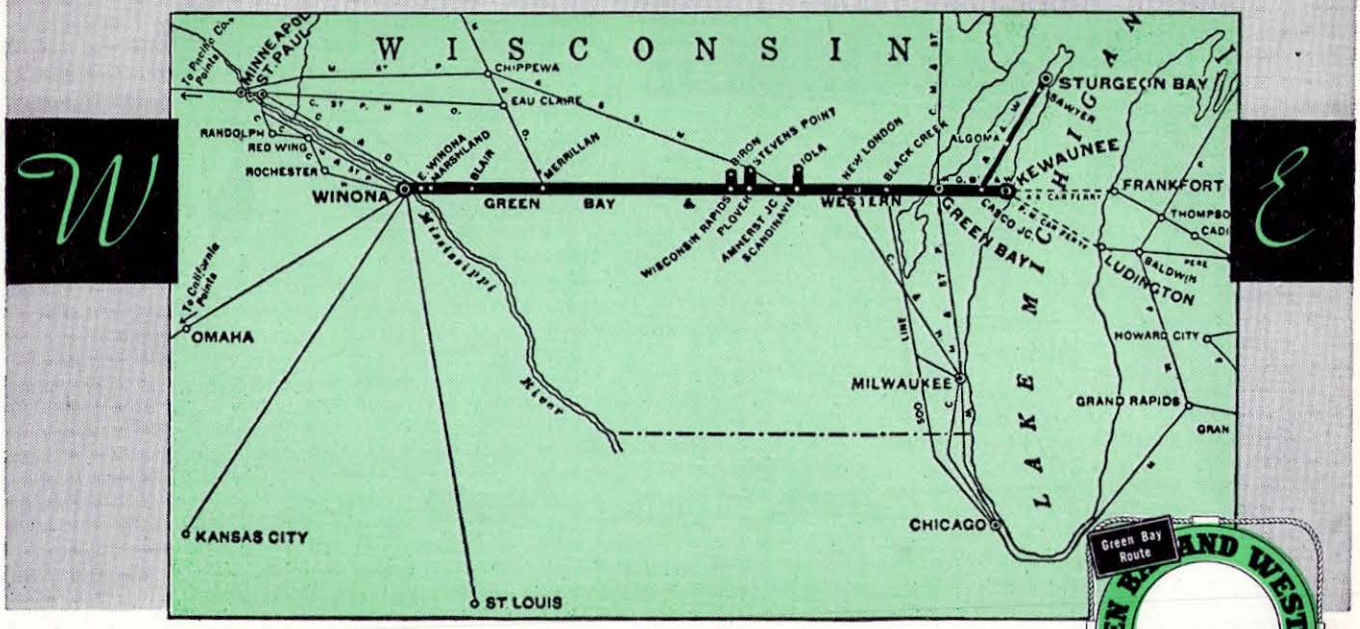
One of the nation's most "dieselized" major railways, Great Northern now has in operation 276 units of diesel power, a substantial percentage in freight service. More of this modern power is on the way for even greater efficiency in Great Northern freight service.

Your Freight goes great when it goes

GREAT NORTHERN

GREAT NORTHERN RAILWAY

GREEN BAY *and* WESTERN LINES



Green Bay Route

GREEN BAY AND WESTERN

Ship the Quick Green Bay Route

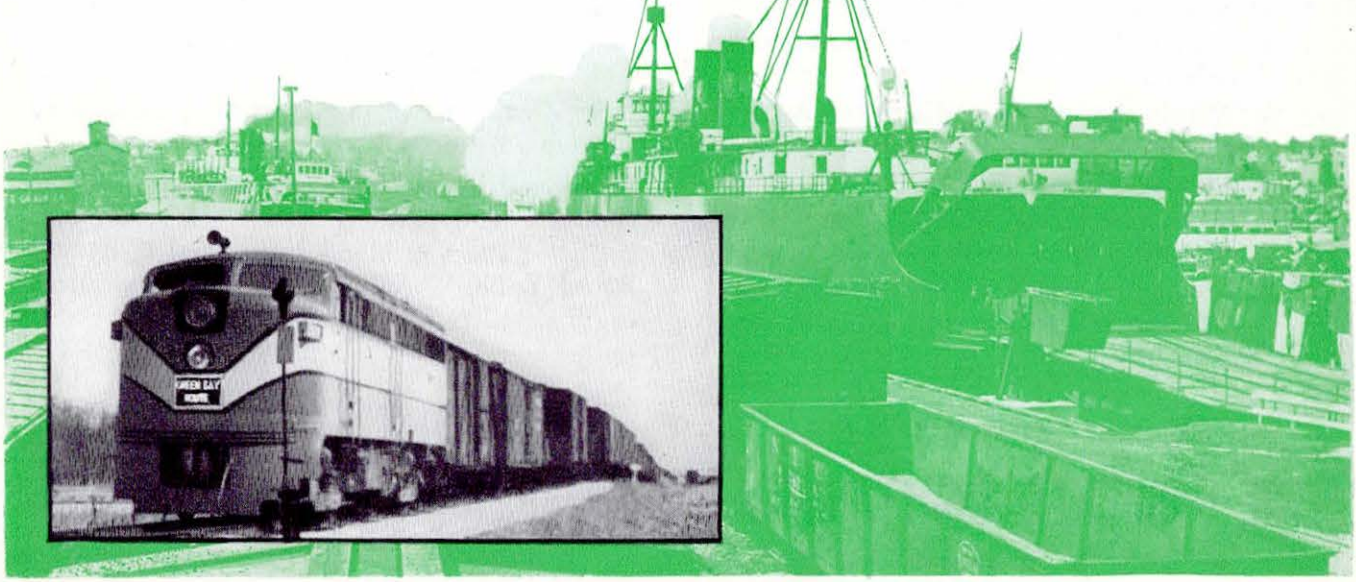
The Green Bay and Western is a small but useful railroad. Its main line—251 miles—extends from Kewaunee, Wis., where it connects with the Ann Arbor and Pere Marquette Railroads, to Winona, Minn., connecting there and at other points along the way with western trunk lines. It therefore is a link in a short fast freight route. This route really hustles your freight along.

During the past 14 years substantial progress has been made in remodeling and improving the railroad. This, along with the inauguration of better operating methods, has increased the capacity of the railroad to handle traffic, and the maximum speed of freight trains approximately 100%.

The character of service for shippers is now at the highest level.

Less carload traffic is handled by motor transport.

WRITE FOR TRAFFIC SCHEDULES AND OTHER PERTINENT INFORMATION TO: GREEN BAY AND WESTERN LINES, GREEN BAY, WISCONSIN.



the Southland Industrial Center *is ready!*

First PLANNED Industrial District in the South

In Atlanta, Georgia, distribution center of the Southeastern region, 170 acres of ideal plant sites are ready for you to choose your location, unroll your blueprints . . . and start construction!

The Southland Industrial Center offers you these outstanding advantages:

- ★ Four miles from heart of downtown Atlanta.
- ★ Within the switching district of Atlanta, which is served by 8 trunkline railroads.
- ★ Alongside mainline of NC&StL Railway, and immediately adjoins the NC&StL's Hills Park Yard.
- ★ Unequalled trucking facilities for local distribution, with paved roads in every direction, bypassing downtown district.
- ★ Roadways, parking spaces, truck loading zones laid out for each site.
- ★ Water, gas, electricity, sewage, telephone line ready for instant connection to each site.
- ★ Right-of-way acquired for four-lane, super-highway through center of district.
- ★ Zoned to separate warehouse and factory sites.

Developed by the NC&StL Railway to give industry the finest possible location and facilities, the Southland Industrial Center is READY NOW. We welcome your inquiries . . for detailed information, address

DEVELOPMENT DEPARTMENT

THE NASHVILLE, CHATTANOOGA & ST. LOUIS RAILWAY

NASHVILLE, TENNESSEE

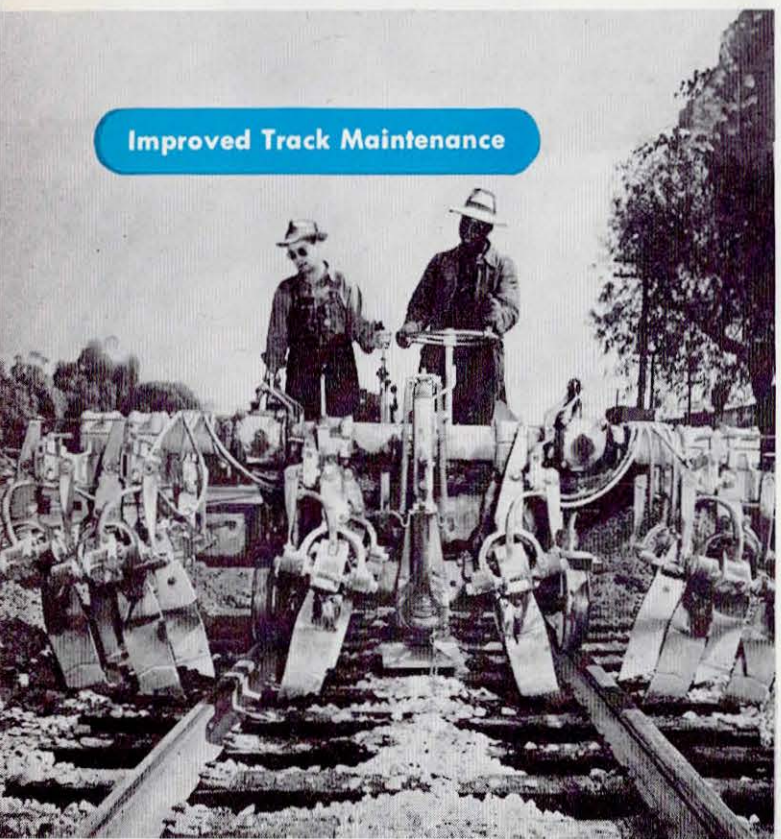
N.C.&St.L.

Ship
Santa Fe
all the way
FREIGHT GO FAST
JUST LIKE CHIEF

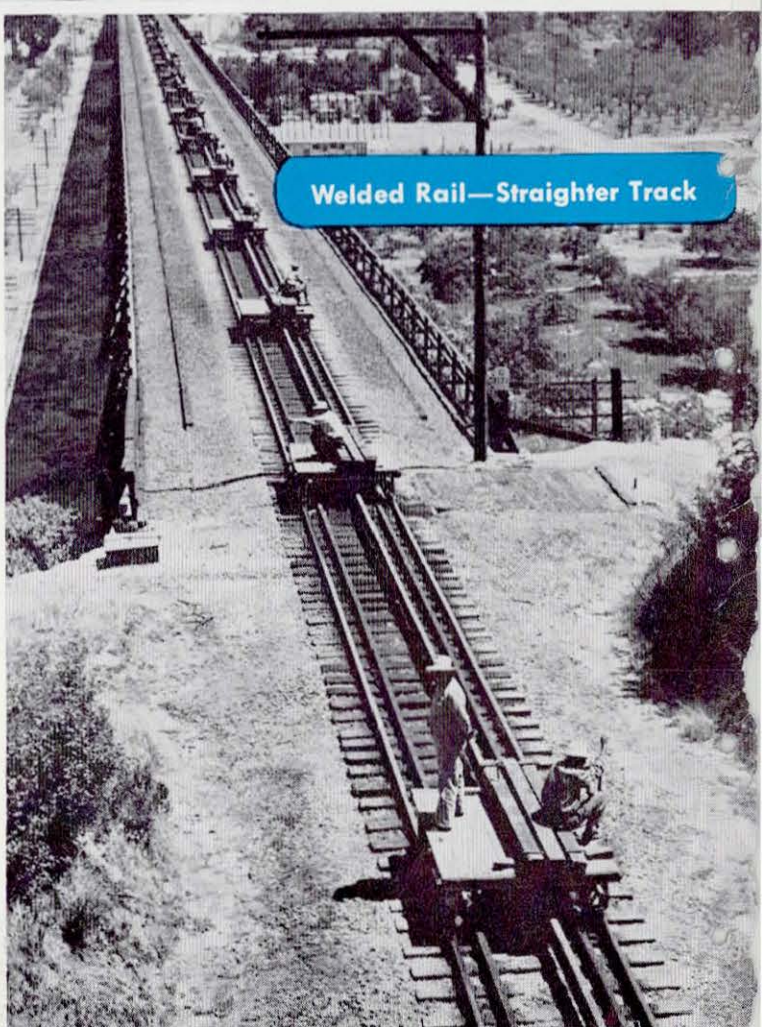
Continuous

Santa Fe

More Diesel Locomotives



Improved Track Maintenance



Welded Rail—Straighter Track

Improvements

to better handle freight shipped Santa Fe all the way

Here are a few of the many ways shippers benefit from Santa Fe's *continuous improvement* program for better handling freight traffic

. . . more Diesel locomotives are constantly being added to our giant fleet to give better on-time service

. . . new track machinery grooms the roadbed so freight can ride easier

. . . welded rail and straighter track permit swifter schedules

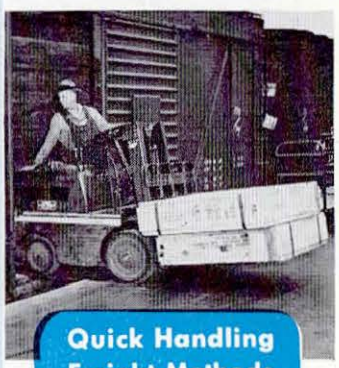
. . . new freight houses equipped with quick-handling freight machines cut down delay on l.c.l. shipments

. . . radio in yards and on trains speeds up freight all along the line

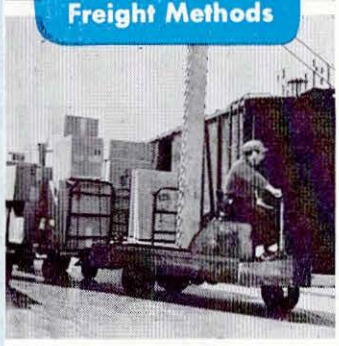
. . . new double-track bridges mean less delays en route

—and there's centralized traffic control, enlarged yards, our vast communication system, our staff of skilled employees as well as many other features that all *add up to getting what you want—where and when you want it—when you ship via Santa Fe!*

New and Improved Freight Stations

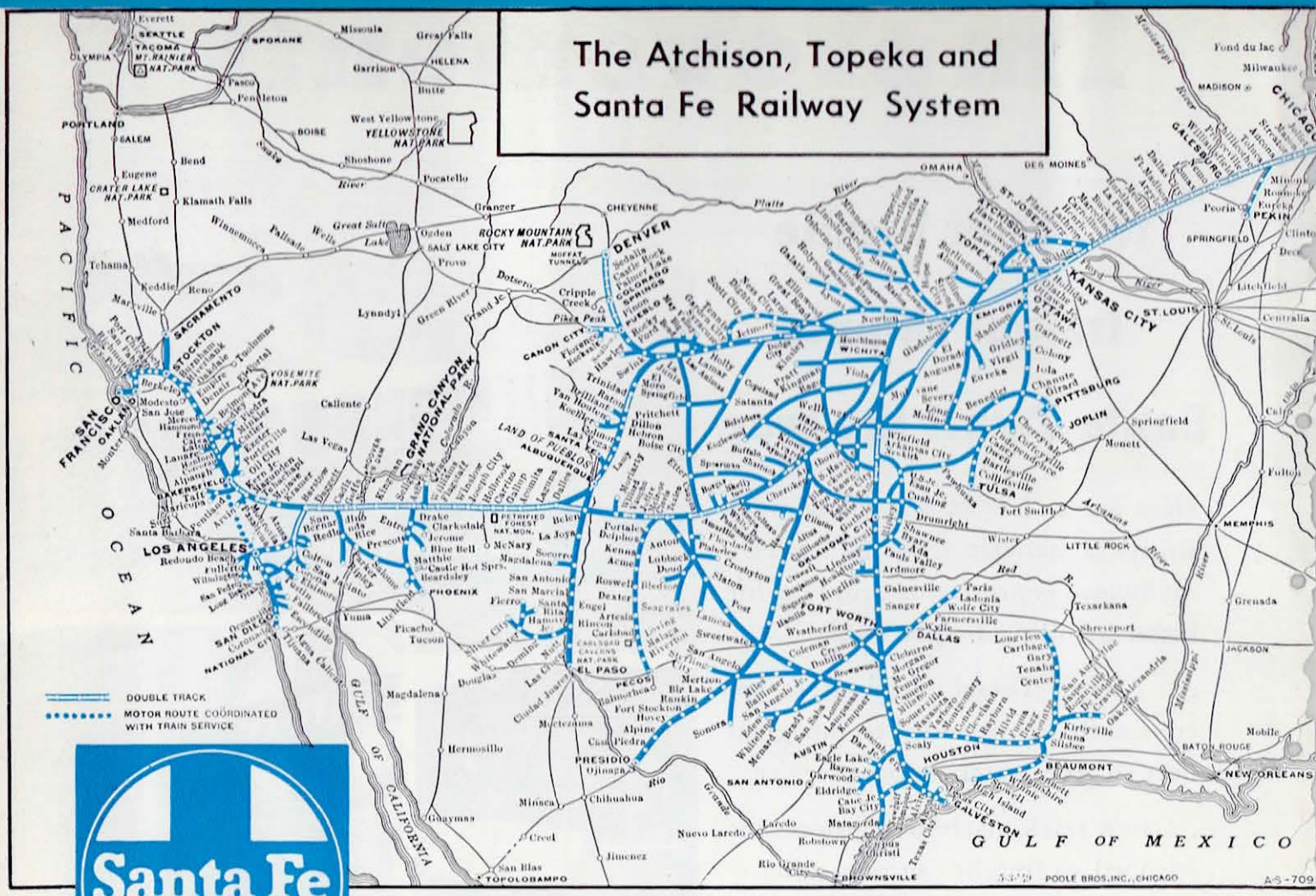


Quick Handling Freight Methods



Walkie-Talkie for Fast Car Checking

New Double-Track Bridges



Santa Fe

Ship via Santa Fe for dependable service

These "Firsts" indicate Santa Fe leadership in the field of freight transportation:

First with main-line Diesel freight service

First and only over-night freight service from Chicago to Kansas City

First in adopting as standard, 9-ft. crossties in conjunction with 131-lb. rail to insure sturdier track

New Business Sites *along the Santa Fe*

Along the Santa Fe from Chicago to California, from Denver to the Gulf of Mexico, there are numerous industrial sites available which offer splendid "Western" opportunities for the expansion of American enterprise.

Santa Fe, working closely with the Chambers of Commerce in the West and Southwest, has at its fingertips vital information with respect to available sites, raw materials and taxes, employment conditions, factory facilities, power, climate, housing, schools, transportation and many other considerations.

If you want the facts about industrial sites anywhere in Santa Fe Land, contact the nearest Santa Fe Traffic Office.

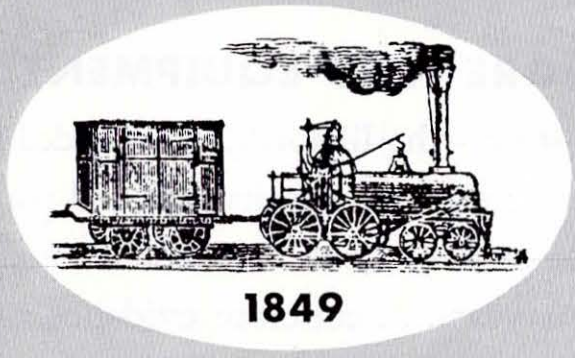
F. H. Rockwell

General Freight Traffic Manager
Chicago 4, Illinois

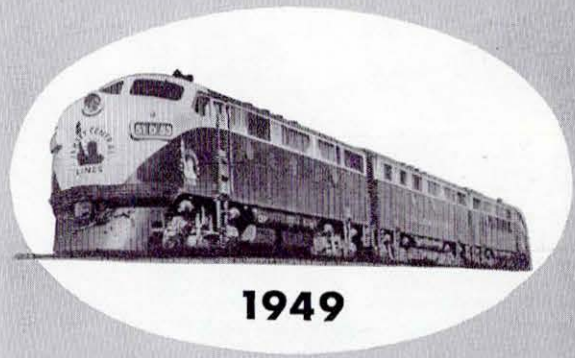
100th ANNIVERSARY

APRIL 23, 1949

The CENTRAL RAILROAD COMPANY OF NEW JERSEY



1849



1949

100 years ago the 35 miles of railroad which connected White House, N. J., with Elizabethtown (now Elizabeth), N. J., and the 13-mile ferry operating between Elizabethtown and New York were officially named

THE CENTRAL RAILROAD COMPANY OF NEW JERSEY

We were a little railroad then with only 74 employes. In our 100 years we have grown into the system known as the JERSEY CENTRAL LINES with more than 9,000 employes and more than 1,700 miles of track strategically located in the busy industrial, mining and farming areas of New Jersey and Pennsylvania and in the great Port of New York.

We are a railroad BIG enough to handle any job of transportation, and LITTLE enough to give important personalized service.

JERSEY CENTRAL LINES

The **BIG** *Little Railroad*

Blue Streak FAST

An Institution

Highly-ranked among the nation's "overnighters"—Blue Streak Fast Freight Service now offers shippers next morning deliveries as far distant as 450 miles—2nd morning deliveries to most Texas points. The business and industrial community in the Southwest leans heavily on this famous service.

This banner train spearheads the Cotton Belt's service to Southwestern shippers. The whole Cotton Belt set-up is geared to fast, dependable handling of freight. It takes modern equipment kept in excellent condition—it takes loyal, thoroughly competent personnel. And the operating records frequently tell the story! In 1947, for instance, average miles per freight car per day were 97.5—the highest for any large Class I railroad the country over.

Last year marked the 20th Anniversary of Cotton Belt's coordinated rail-truck service. Today a fleet of modern trailer-trucks criss-cross the entire Cotton Belt territory offering shippers and receivers no matter how remote, quick access to markets and materials.

Looking for a profitable plant location? The fast-developing Southwest is a "natural." Here, in addition to excellent main line transportation facilities, you have an ample supply of labor, favorable raw material, fuel and power resources. Join the steady procession to the Southwest. We shall gladly co-operate.

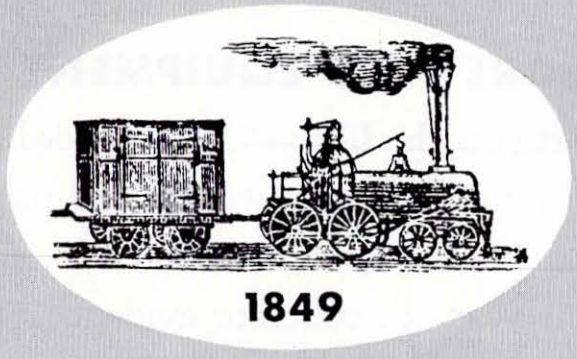
COTTON BELT ROUTE

MAIN

100th ANNIVERSARY

APRIL 23, 1949

The CENTRAL RAILROAD COMPANY OF NEW JERSEY



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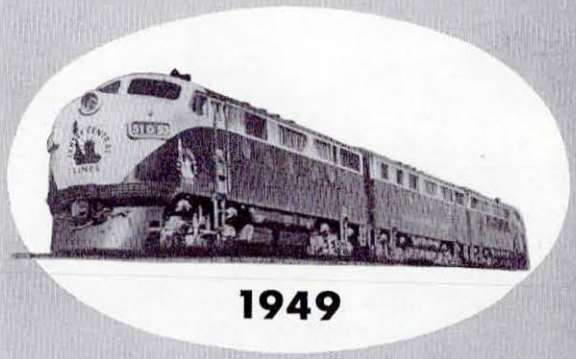

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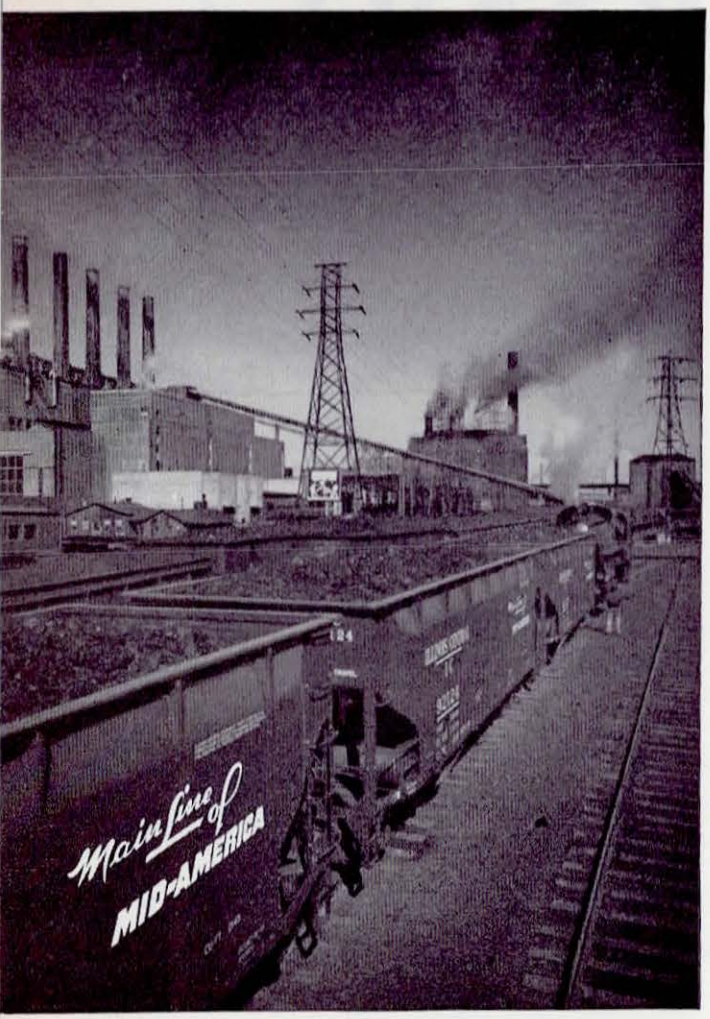
The **BIG** *Little Railroad*

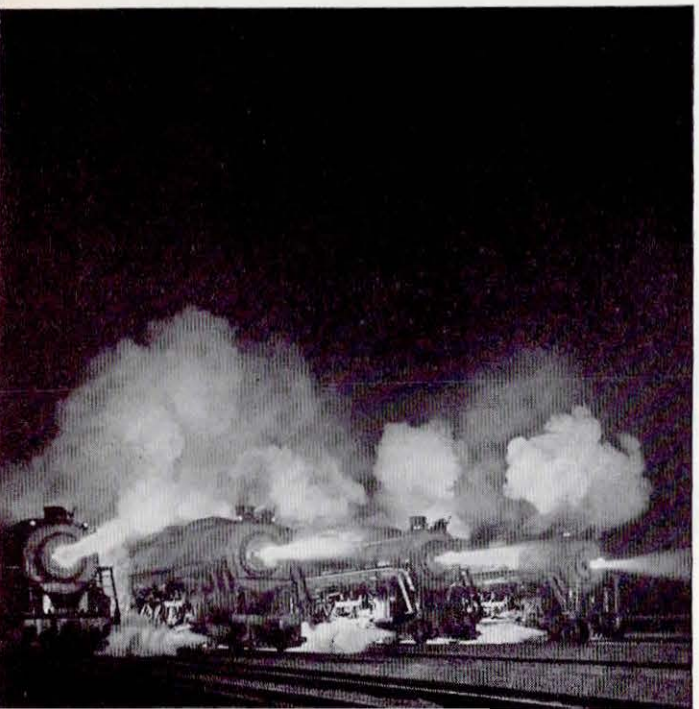
ILLINOIS CENTRAL



IMPROVED SERVICE for SHIPPERS

MORE NEW EQUIPMENT

Last year the Illinois Central added 4,160 new freight cars to its fleet and plans to put another 6,000 new cars into service this year . . . concrete evidence of the Illinois Central's determination to render its shippers freight service that is ample, up-to-date and dependable.



FINER FREIGHT FLEET

Every day 41 fast dispatch freight trains leave on dependably scheduled runs connecting principal points on the Illinois Central. Another six trains operate six days a week.

SHORTEST AND

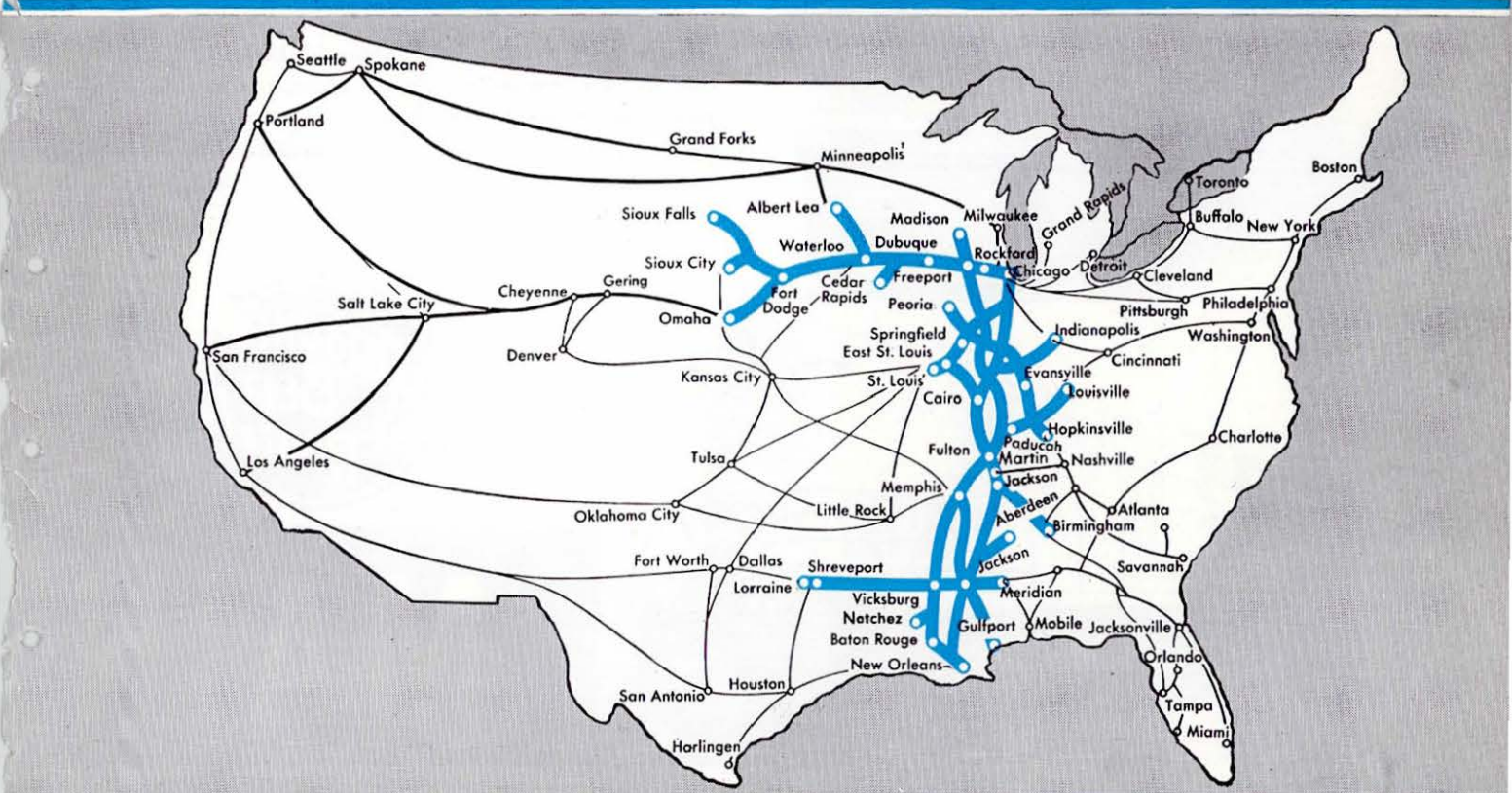
RAILROAD

MAIN LINE
OF MID-AMERICA

MORE BUSINESS for MID-AMERICA

LATIN-AMERICAN TRADE

is a basic factor in the prosperity of the great middle area of the United States served by the Illinois Central. The railroad is continuing its vigorous campaign to promote a greater flow of traffic between the Americas.



FASTEST—GREAT LAKES TO GULF

Blue Streak FAST

An Institution

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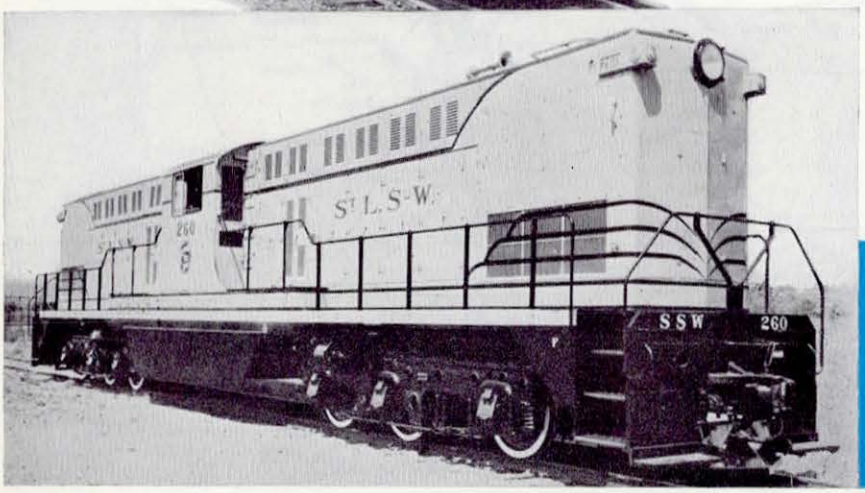


COTTON BELT ROUTE

MAIN

FREIGHT SERVICE
in the Southwest

1ST

The Cotton Belt was the first railroad in the Southwest to provide:

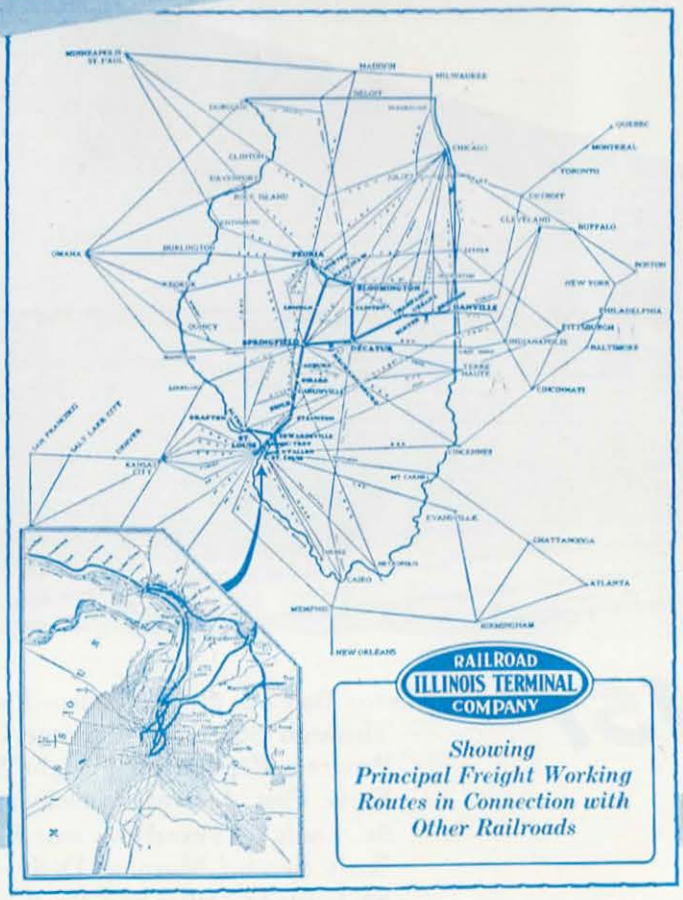
Through Scheduled Package Car Service
Progress Reports on Freight Shipments en route
Early First Afternoon Delivery
St. Louis to Texarkana and Shreveport
Early Second Morning Delivery
St. Louis to Dallas and Ft. Worth
Coordinated Train and Truck Service—
Truck Pick-up, Train Transit and Truck Delivery

LINE Southwest

an IMPORTANT ROAD in the Mid-West!

PERSONAL SERVICE *to shippers ...*

Comprising 474 miles of diesel, steam, and electric railway, the Illinois Terminal Railroad provides direct haul, fast freight service between the industrial zones of St. Louis, the East Side of the Mississippi River, and Central and Eastern Illinois.



Showing Principal Freight Working Routes in Connection with Other Railroads

Call YOUR NEAREST TRAFFIC REPRESENTATIVE

If your shipments originate in, or are destined to, or pass through any point within this area of greatest density, you'll find that Illinois Terminal routing will serve you efficiently. More than 250 industries are served exclusively from our own rails, and service is extended to 3,500 others through reciprocal switching arrangements. We serve the Heart of Illinois, and have access to coal mines in the Belleville, Springfield and Danville districts, whose annual production exceeds 5,000,000 tons.

710 North Twelfth Boulevard, St. Louis, Mo.
W. M. Long, Vice-President, Traffic

Illinois Terminal

RAILROAD ILLINOIS TERMINAL COMPANY

GREAT NORTHERN spells SERVICE the modern way...

D-I-E-S-E-L

Freight shipments over Great Northern are moved more efficiently and safely these days because of the extensive use of diesel-electric power.

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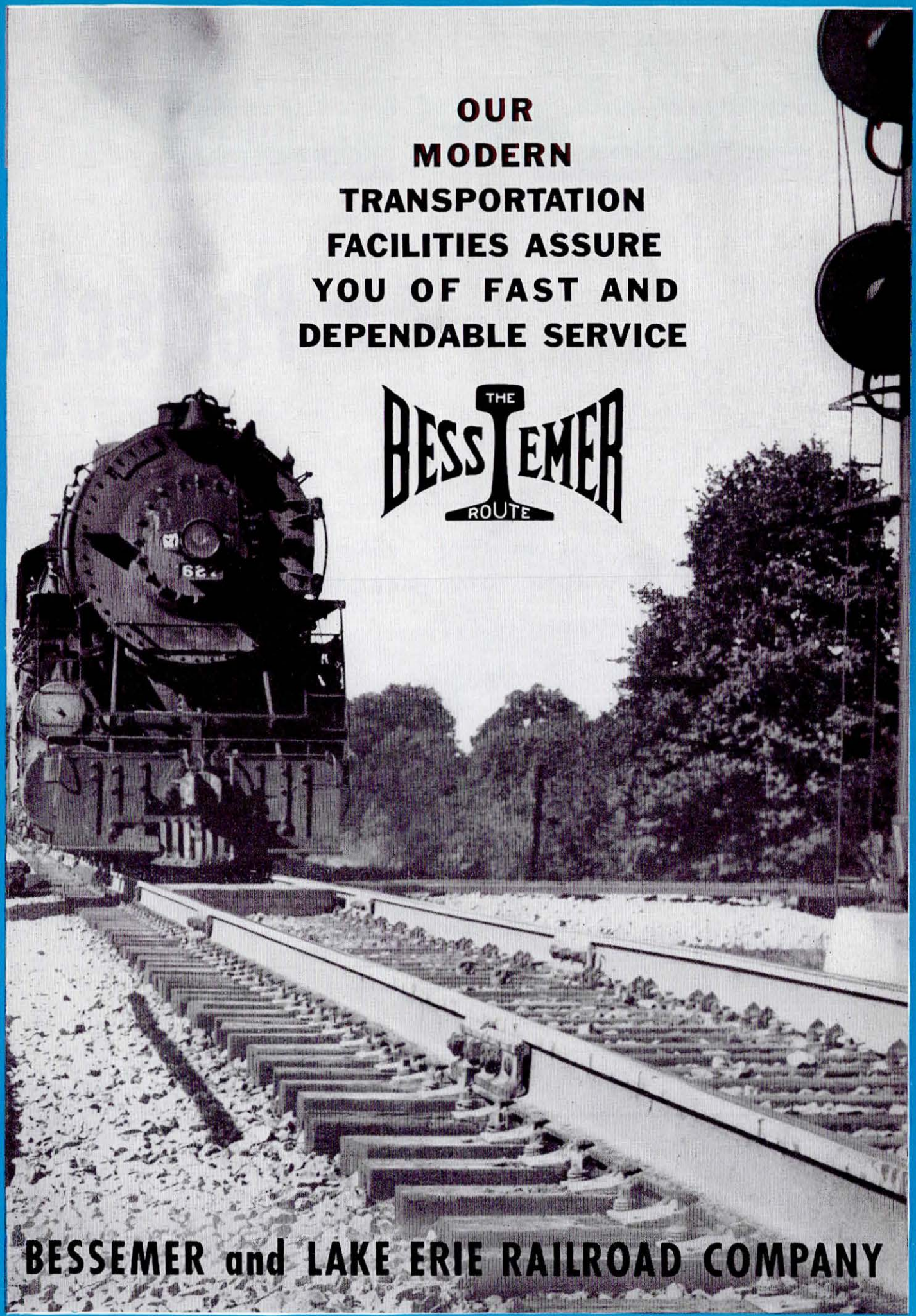
Your Freight goes great when it goes

GREAT NORTHERN

GREAT NORTHERN RAILWAY

TYPICAL OF "TOMORROW'S LOOK" ON THE SOUTHERN TODAY is this view of Diesels being groomed at the railway's new million-dollar Diesel shop at Chattanooga, Tenn. A fleet of 521 Diesel units in service and on order, including the first road freight Diesel built in America, is just one phase of a system-wide, continuing program of modernization and improvement that's giving shippers and passengers the best in transportation service on the Southern that "Serves the South." • **SOUTHERN RAILWAY SYSTEM**


OUR
MODERN
TRANSPORTATION
FACILITIES ASSURE
YOU OF FAST AND
DEPENDABLE SERVICE
THE
BESSEMER
ROUTE
BESSEMER and LAKE ERIE RAILROAD COMPANY

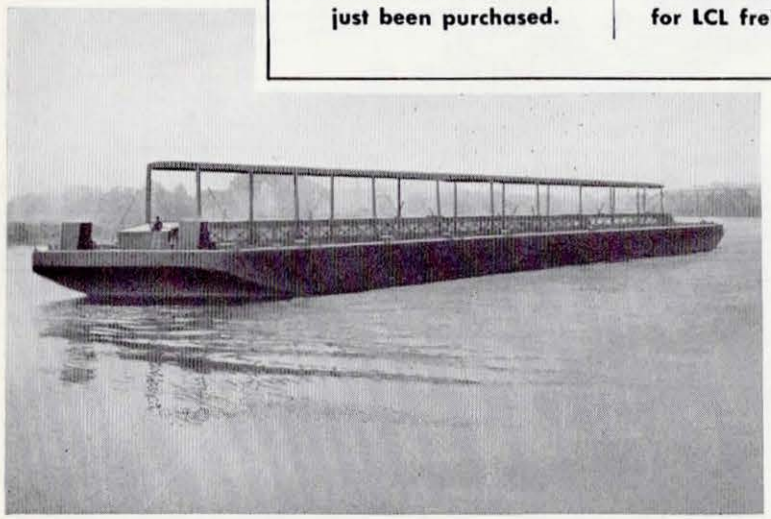
HIGH SPEED FREIGHT DELIVERY + **MODERN FACILITIES** +

= Perfect

One of Lackawanna's new steel car-floats.

20 new steel Scows have just been purchased.

Fork-lift and Pallet trucks for LCL freight handling.



CAREFUL AND EFFICIENT HANDLING

Shipping Service on the Lackawanna!

LACKAWANNA'S fleet of super-powered Diesel locomotives provides dependable service between the Atlantic Seaboard and the Great Lakes . . . serving Scranton, Binghamton, Utica, Elmira and Syracuse along the way, and linking up at Buffalo with the principal markets of the west.

Shippers know that they can count on Lackawanna for careful and efficient handling of freight. Trained and experienced freight house employees are constantly alert to prevent loss of or damage to valuable shipments.

To expedite the handling of freight at its docks and terminals, the Lackawanna has spent huge sums to modernize and improve its facilities. Typical of the new mechanized equipment now in operation at Lackawanna freight stations and piers is the fork-lift "pusher" truck pictured here.

In addition, 6 new steel carfloats (platform type), 326 ft. long by 40 ft. wide, and 20 steel scows, 112 ft. long by 32 ft. wide, have been purchased recently to facilitate Lackawanna's marine and transfer operations.

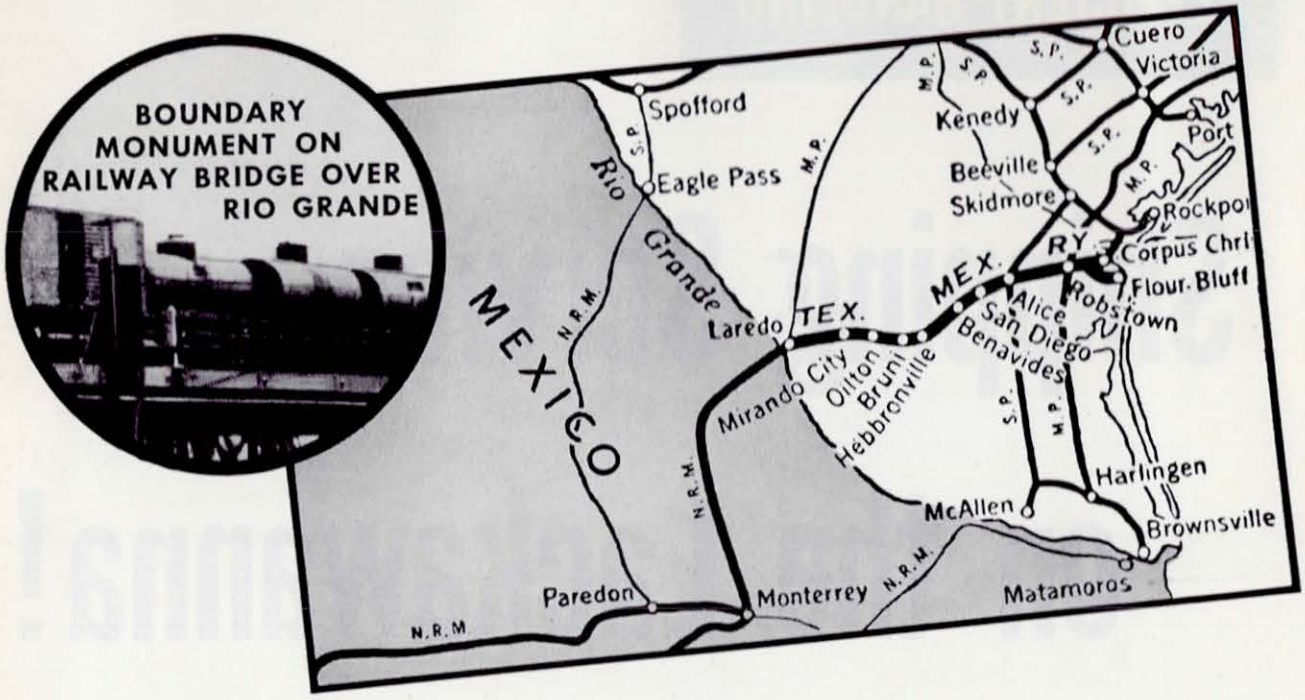
For Perfect Shipping . . . with speed, efficiency and care . . . *there's nothing lacking on the Lackawanna!*

Lackawanna Railroad

THE ROUTE OF

PHOEBE SNOW

Gateway to Mexico...



...and the FIRST all-dieselized Class I Railroad in America

Shortest, fastest, and best route for your export shipments to Mexico City and other cross-border points is by The Texas Mexican Railway. This important link between the port city of Corpus Christi and the international gateway of Laredo offers dependable service with modern equipment, and has direct connections with the Southern Pacific Lines at Alice and the Missouri Pacific Lines at Robstown. At the Boundary Monument pictured above, our rails join the rails of the National Railways of Mexico. We are specialists in international traffic. Indicative of its progressiveness is the fact that Texas Mexican is now in its tenth year of complete diesel operation. Route *your* shipments via Texas Mexican.

Want data on Mexican customs— strategic plant locations?

If you do business in Mexico or are planning such a move, let us help you. Such matters as customs and trade regulations are routine with us and we can provide you with authoritative answers to most of your questions. Let us also explain the advantages of a plant or branch warehouse located in the tip of Texas along the Tex.Mex. route where freight service is tops.

The Texas Mexican Railway Company

W. C. Beaman, *Traffic Manager* **LAREDO, TEXAS**

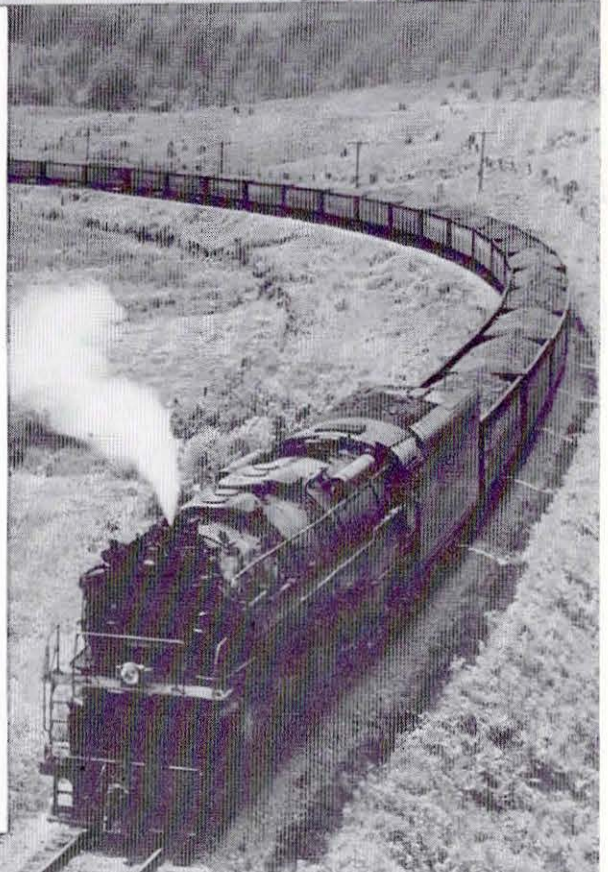
OUR AIM ... A Better Transportation Job for You

Progressively Progressive

IN 1948, the Virginian Railway placed in service four of the most powerful electric locomotives to provide shippers along the lines with faster and more dependable service. These new locomotives have a tremendous reserve power for negotiating grades and will be used on the 134 miles of electrified route, namely to speed up all freight shipments over the Allegheny mountains between Mullens, W. Va., and Roanoke, Va.

Good railroad connections at its western termini, the Virginian forms a strategic and shorter route for the vital industries in this territory from East Central United States to Norfolk, Va., the greatest port on the Atlantic seaboard.

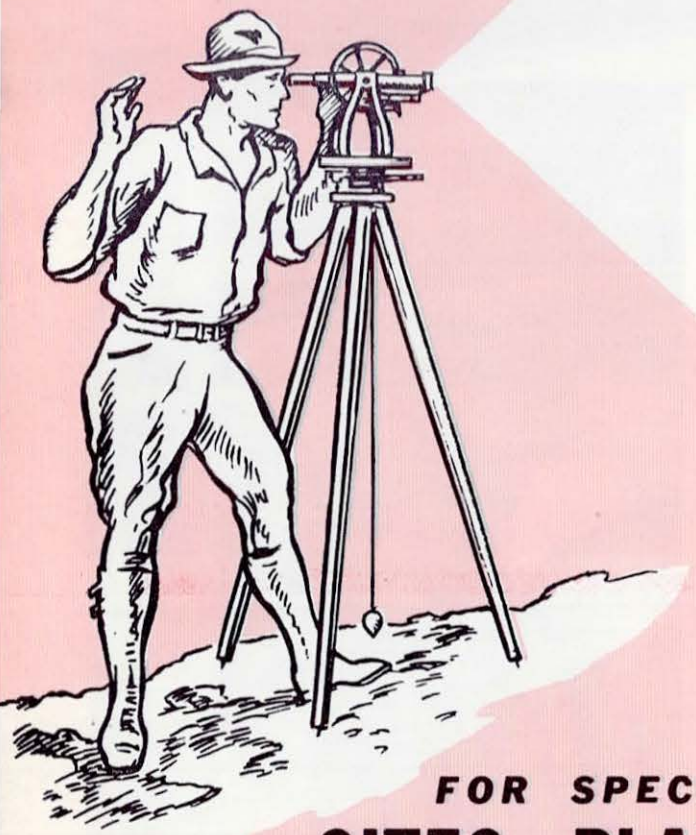
Extensive signaling improvements in the vicinity of Norfolk, Va., are now expediting train movement in and out of this important terminal thus giving the shippers faster and more dependable service.



Ship VIRGINIAN

THE EXACT "Line" FOR YOUR PLANT

"the D&H"



FOR SPECIFIC DATA ON

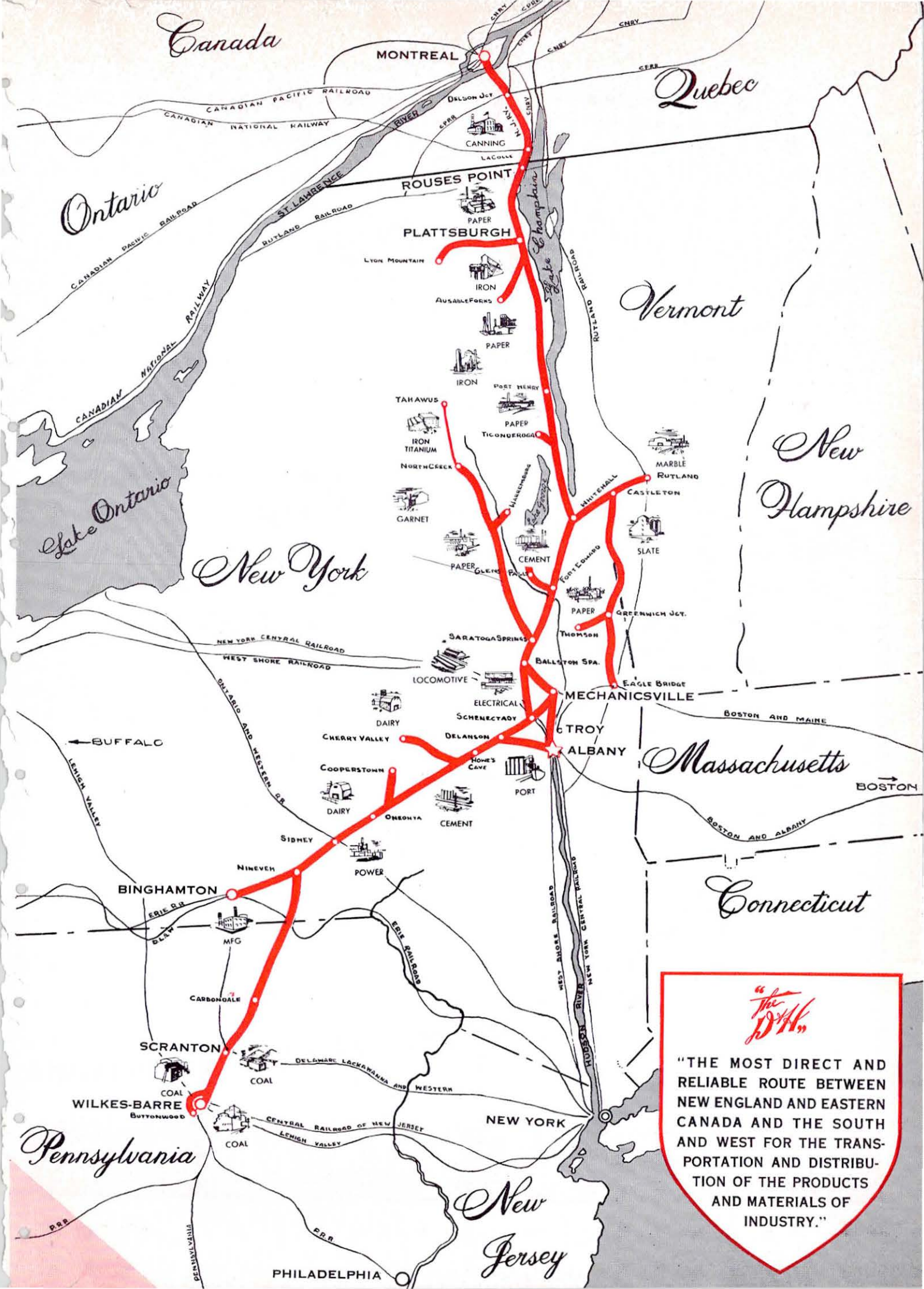
SITES · PLANTS · SURVEYS
CONTRACTORS *AND* COSTS

CONTACT

MANAGER OF REAL ESTATE AND INDUSTRIAL DEVELOPMENT

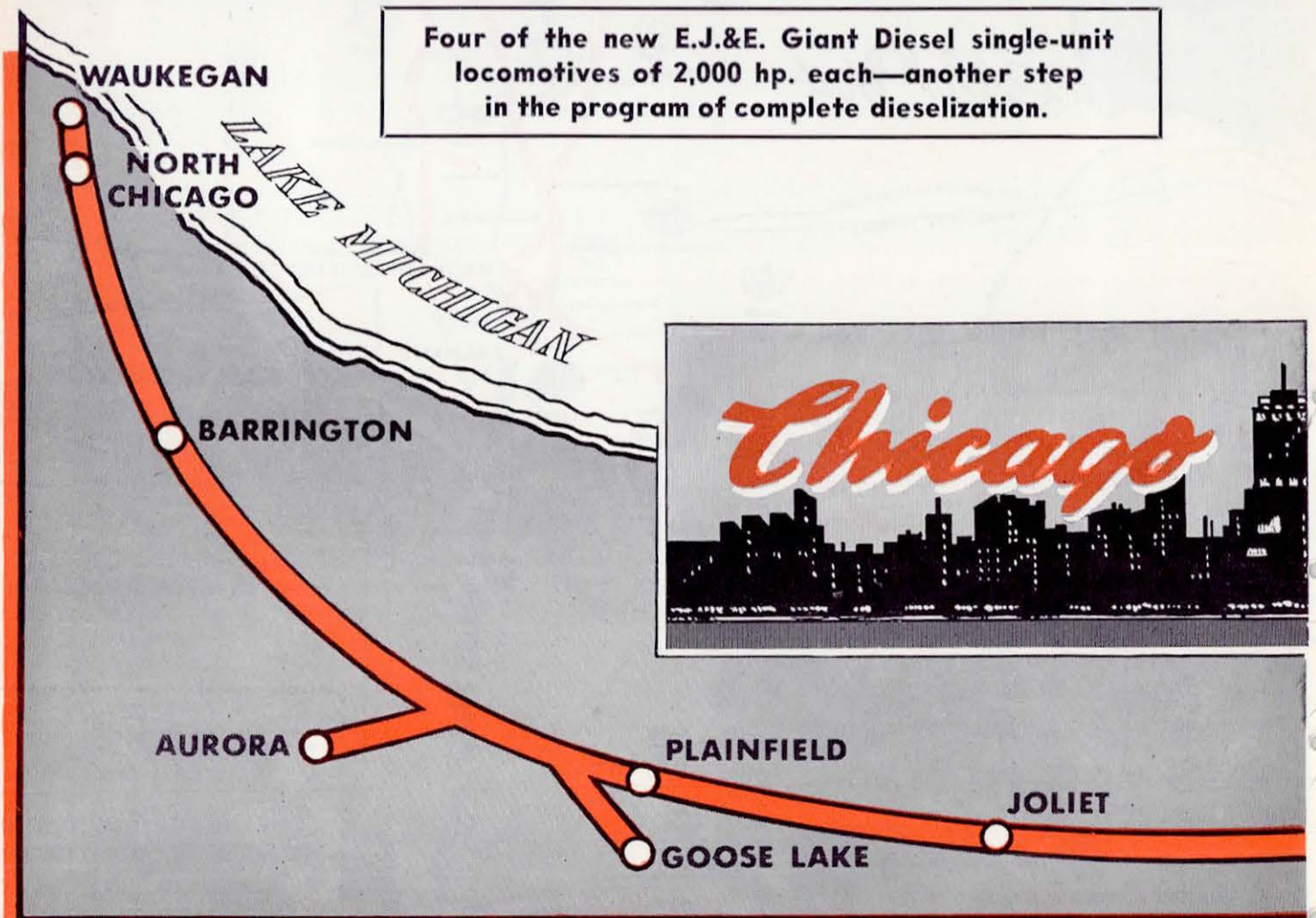
THE DELAWARE AND HUDSON RAILROAD CORP.

ALBANY 1, N. Y.


Canada
MONTREAL
CNRY
CPRR
Quebec
CANADIAN PACIFIC RAILROAD
CANADIAN NATIONAL RAILWAY
DELSON JCT.
CANNING
LACOLLE
ROUSES POINT
ST. LAWRENCE RIVER
Ontario
CANADIAN PACIFIC RAILROAD
RUTLAND RAILROAD
PAPER
PLATTSBURGH
Lake Champlain
LYON MOUNTAIN
IRON
AUSABLE FORKS
PAPER
IRON
PORT HENRY
PAPER
TAHAWUS
IRON TITANIUM
TICONDEROGA
NORTH CREEK
WHITEHALL
MARBLE
RUTLAND
CASTLETON
GARNET
SLATE
CEMENT
PAPER
GLENS FALLS
FORT EDWARD
PAPER
GREENWICH JCT.
THOMSON
SARATOGA SPRINGS
NEW YORK CENTRAL RAILROAD
WEST SHORE RAILROAD
LOCOMOTIVE
BALLSTON SPA.
EAGLE BRIDGE
MECHANICSVILLE
ELECTRICAL
DAIRY
SCHENECTADY
TROY
ALBANY
BOSTON AND MAINE
BUFFALO
CHERRY VALLEY
DELANSON
HOME'S CAVE
COOPERSTOWN
PORT
DAIRY
ONEONTA
CEMENT
BOSTON
BOSTON AND ALBANY
LEHIGH VALLEY
ONTARIO AND WESTERN R.R.
SIDNEY
NINEVEH
POWER
BINGHAMTON
ERIE R.R.
D.L.&W.
MFG
ERIE RAILROAD
CARBONDALE
WEST SHORE RAILROAD
HUDSON RIVER
NEW YORK CENTRAL RAILROAD
SCRANTON
COAL
DELAWARE LACKAWANNA AND WESTERN
COAL
WILKES-BARRE
BUTTONWOOD
CENTRAL RAILROAD OF NEW JERSEY
LEHIGH VALLEY
COAL
NEW YORK
Pennsylvania
New Jersey
PRR
PENNSYLVANIA
PRR
PHILADELPHIA
New York
Vermont
New Hampshire
Massachusetts
Connecticut
"The D&H"
"THE MOST DIRECT AND RELIABLE ROUTE BETWEEN NEW ENGLAND AND EASTERN CANADA AND THE SOUTH AND WEST FOR THE TRANSPORTATION AND DISTRIBUTION OF THE PRODUCTS AND MATERIALS OF INDUSTRY."

MODERNIZATION——

Four of the new E.J.&E. Giant Diesel single-unit locomotives of 2,000 hp. each—another step in the program of complete dieselization.



INTERCHANGE WITH ALL RAIL

PLUS POWER

CHICAGO
E. J. & E. RY.
OUTER BELT

Power — Already we have a fleet of 26 giant Diesel road locomotives which are supplemented by steam locomotives and another fleet of Diesel switchers. This collective power is being augmented this year with additional units for complete Dieselization.

Rolling stock—New cars for various loadings have been added during the past year and all equipment is carefully maintained in good working order in our own car shops.

Roadway — Annual programs for laying heavier rail, ballasting and surfacing, together with proper drainage assure uninterrupted train operation.

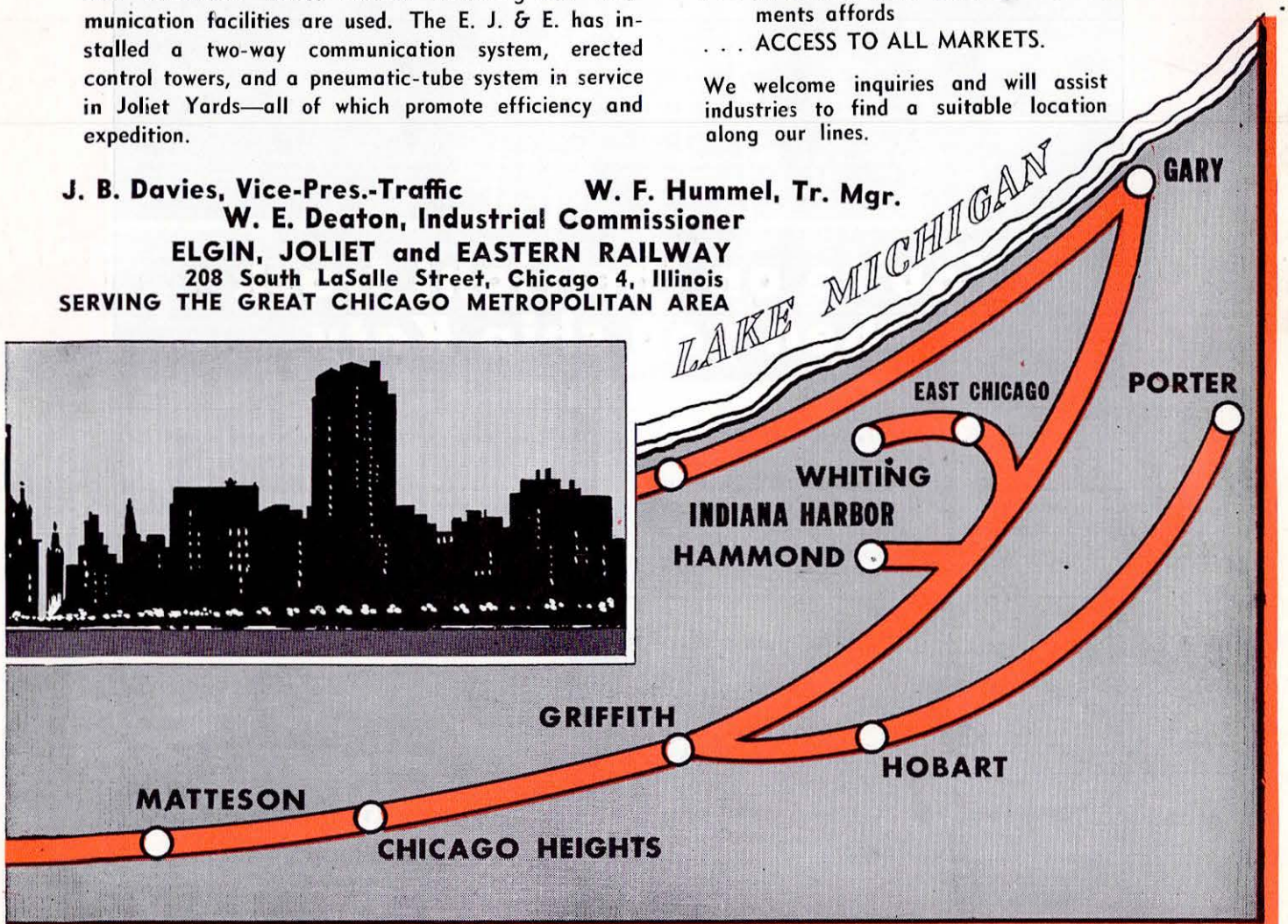
Fixed properties — Classification yards can be a real bottleneck unless modern switching and communication facilities are used. The E. J. & E. has installed a two-way communication system, erected control towers, and a pneumatic-tube system in service in Joliet Yards—all of which promote efficiency and expedition.

If you are planning on decentralizing or building a new plant, we want you to consider the following E. J. & E. advantages because you will have

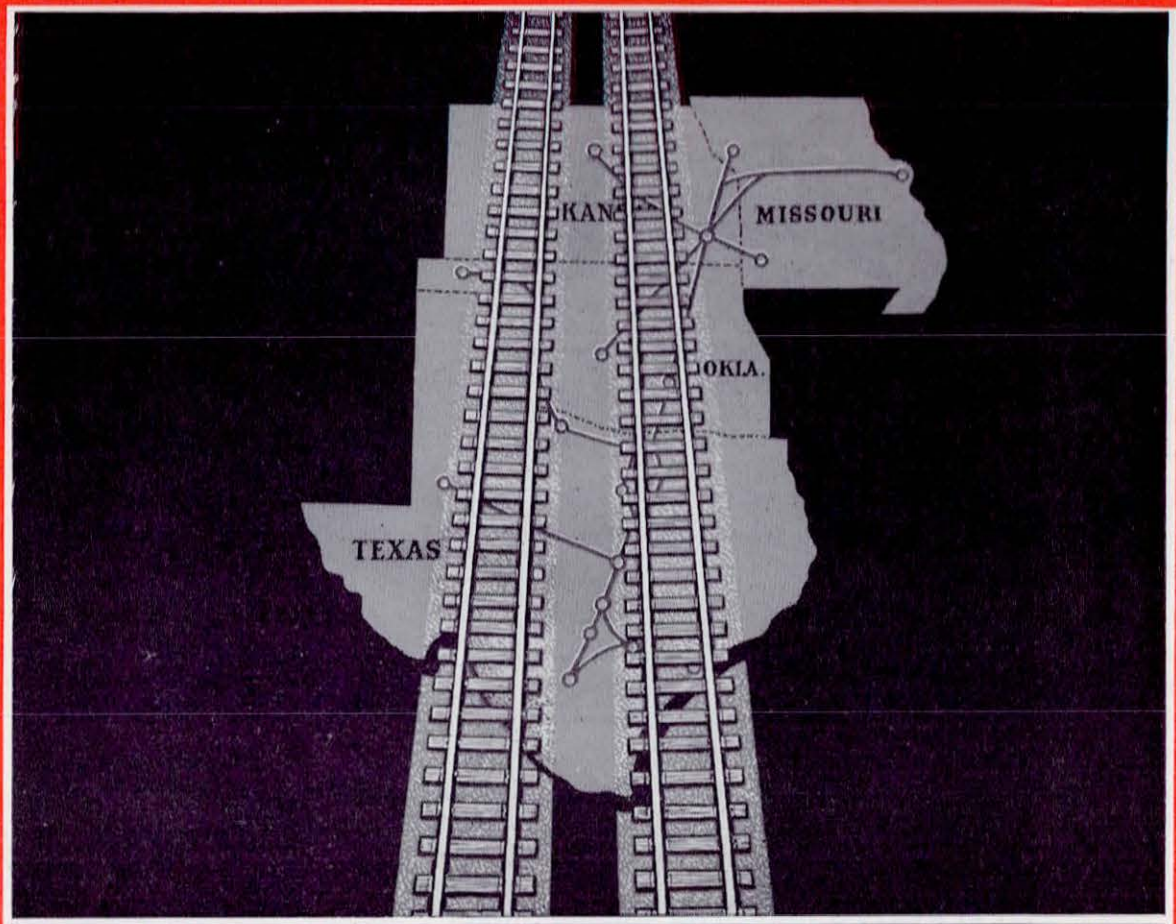
. . . LOWER LAND COSTS, which in turn are reflected in
. . . LOWER PROPERTY TAXES in a metropolitan area, with
. . . ADEQUATE ROOM FOR PLANT EXPANSION, in addition to
. . . GOOD ROADS for your employees' transportation and
. . . PLEASANT LIVING CONDITIONS. The E. J. & E. provides
. . . A RAILWAY INTERSECTING ALL ROADS entering Chicago with
. . . INTERCHANGE SERVICE for nationwide shipments affords
. . . ACCESS TO ALL MARKETS.

We welcome inquiries and will assist industries to find a suitable location along our lines.

J. B. Davies, Vice-Pres.-Traffic **W. F. Hummel, Tr. Mgr.**
W. E. Deaton, Industrial Commissioner
ELGIN, JOLIET and EASTERN RAILWAY
208 South LaSalle Street, Chicago 4, Illinois
SERVING THE GREAT CHICAGO METROPOLITAN AREA



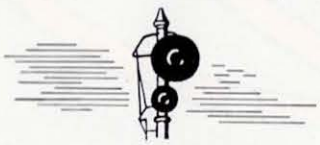
ROADS ENTERING CHICAGO



You're on the right track when you ship *Katy*

Five crack Katy freights, operating on stepped-up daily schedules, provide dependable, on-time service between Texas and Oklahoma and the North, with extensive connecting service at terminals.

Smooth-hauling new road and yard Diesels, new cars and new rail . . . new automatic signals . . . the swift magic of radio, on-line and at terminals . . . service PLUS to you. Broader facilities, in rolling stock, yards and terminals, with one idea in mind: SAFER, BETTER FREIGHT SERVICE for You!

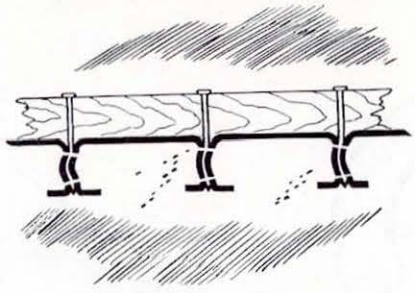


AUTOMATIC BLOCK SIGNALS . . . precision-control the movements of Katy's freight fleet to suit your every shipping need.

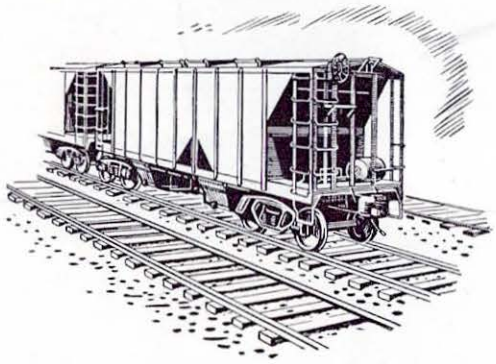
NEW DIESEL POWER . . . to deliver your goods in perfect condition. High-speed power that permits scheduling to suit your every shipping need.

NEW 115-POUND RAIL . . . mile after mile of improved-design, heavy-duty rail — along smooth roadbeds "manicured" to perfection.

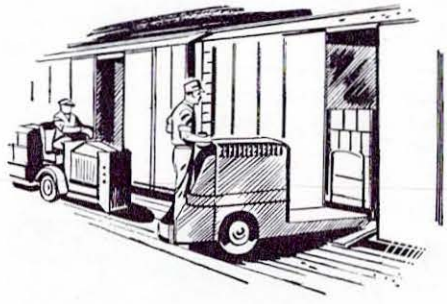
End-to-End Radio Communication provides safer, speedier handling of your freight, in all kinds of weather, right down the line. This modern miracle is another PLUS, in Katy's famous "on time" shipping service.



Nailable All-Purpose Steel Flooring trims terminal delays by making car floors suitable for all types of freight. A Katy service innovation in the Southwest, for more versatile, faster handling of your goods.



Hundreds of New Cars—new gondola, hopper and box cars, specially built to carry *all* types of heavy cargo shipments, for added capacity, added service, even more dependability when your freight goes Katy!



Modern Freight Terminals combine human skill and complete mechanical facilities to precision-process your goods safely and efficiently, to high-speed the handling of your carloads to markets and factories.

KATY BULLET . . . Daily from Kansas City and St. Louis to all main Southwestern points.

KATY KLIPPER . . . Daily, St. Louis and Kansas City to Oklahoma and Texas.

KATY PACKER . . . Northbound daily, Fort Worth to Kansas City and St. Louis.

"72" FAST FREIGHT . . . Daily from Texas and Oklahoma to Kansas City and St. Louis.

KATY KOMET . . . Katy's fastest—South bound daily from St. Louis to all main-lin points.

the Katy

M·K·T KATY RAILROAD MISSOURI-KANSAS-TEXAS

NATURAL ROUTE SOUTHWEST

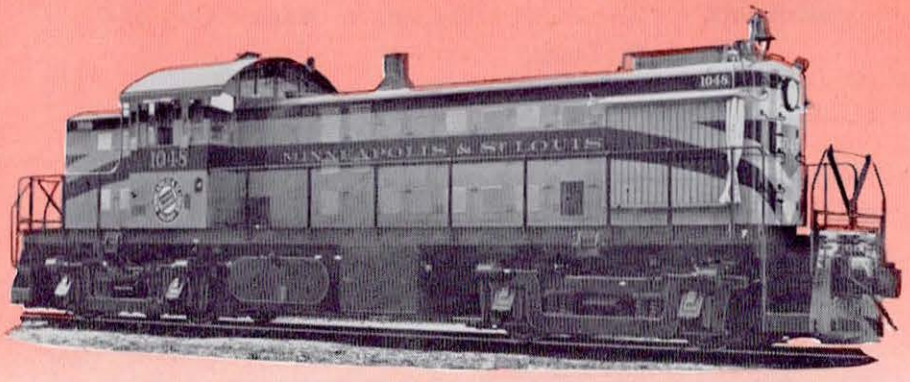
365

1949–another year of *Freight*

THE MINNEAPOLIS & ST. LOUIS RAILWAY CO.
THE PEORIA GATEWAY

Three 3000-horsepower Diesel Road Locomotives acquired in 1948; three more on order for 1949.

Six hundred all-steel 50-ton Box Cars, placed in service in 1948.



Three 1000-horsepower Diesel Road-and-Switching Locomotives acquired in 1948; five more on order for 1949.

Teletypewriter Service at Major Offices *Traffic Offices in 36 Key Cities*

The MINNEAPOLIS

Progress on the M. & ST. L.

By the end of 1949, motive power on the Minneapolis & St. Louis Railway will be almost completely Dieselized, climaxing a ten-year program for constant improvement of equipment, tracks and other properties on the road of

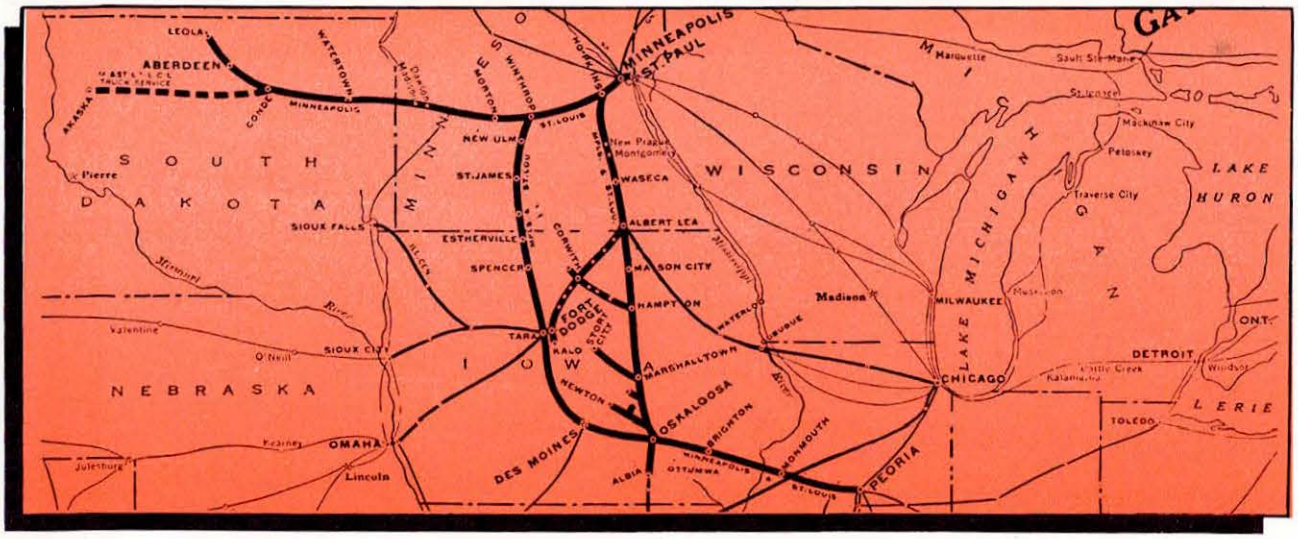
Modern & Stream Lined Freight Service

New engines, to be delivered in 1949, will increase the M. & St. L. fleet of Diesel power to 50 locomotives, nearly all of them new in the past four years.

This more efficient and economical power, combined with fleets of all-modern freight cars, makes certain that the M. & St. L. will sustain its 78-years reputation for Fast Dependable Service.

● ***To Shippers and Receivers*** ● ***To Agriculture and Industry***

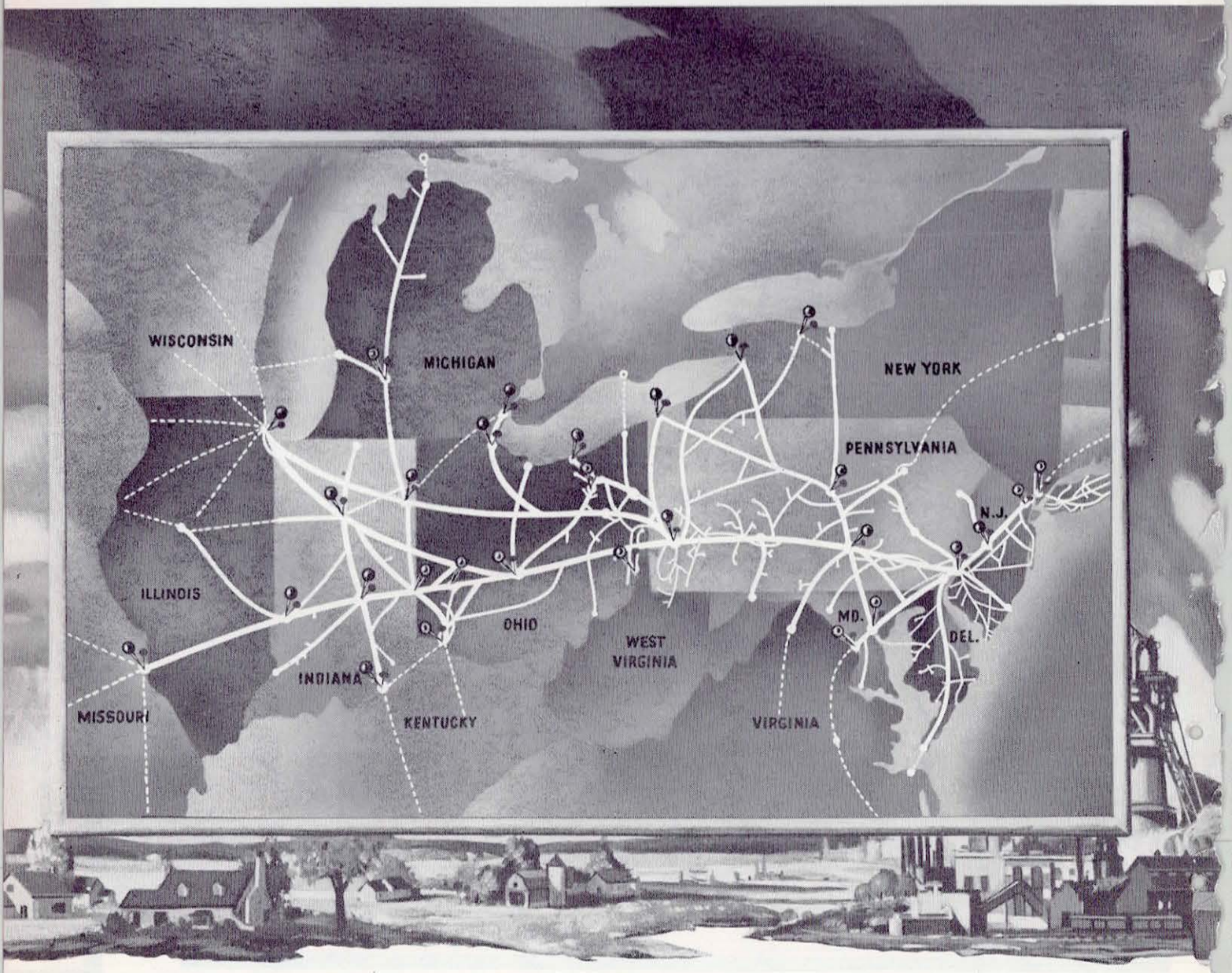
And, via Peoria and other Traffic Gateways, to Connecting Railroads



& ST. LOUIS *Railway*

SHORT-CUT TO MARKETS

HERE'S THE RAIL NETWORK THAT SPEEDS DISTRIBUTION



PENNSYLVANIA RAILROAD

PENNSYLVANIA RAILROAD

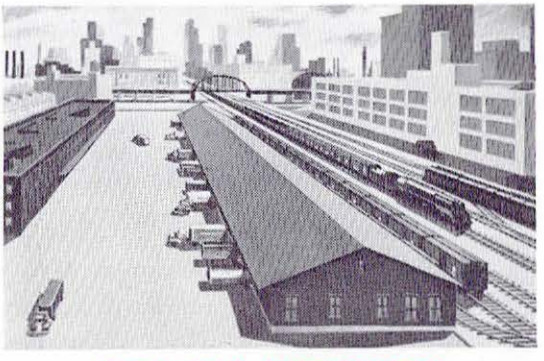
Freight handling facilities of the Pennsylvania Railroad, combined with the strategic relation of its right-of-way through America's great industrial centers, offer shippers fast, economical distribution.

Here is the shortest East-West route, a short-cut to markets in 3,000 communities served by 2,700 freight trains and 1,100 passenger trains every day. Pin-pointed on the map are some of the great urban communities served by the Pennsylvania, including 9 of the Nation's 11 largest cities.

★ ★ ★

QUICK SERVICE TO CUSTOMERS

2,700 freight trains daily on the Pennsylvania plus main highways along its 11,000 miles of right-of-way, provide unequaled distribution facilities.



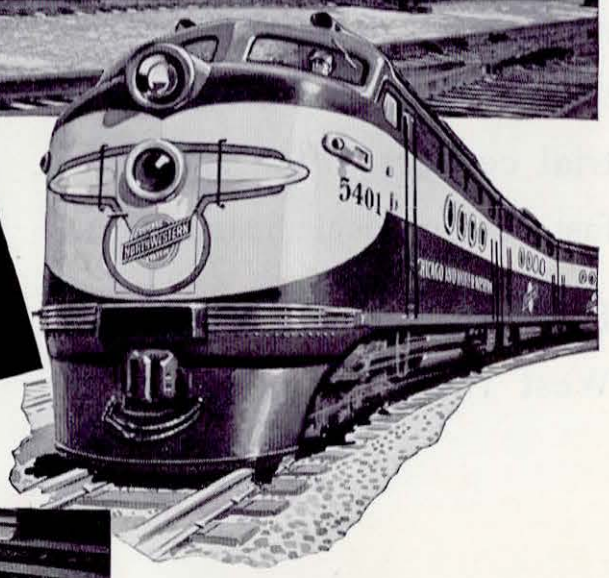
POOL CAR DISTRIBUTION

Pennsylvania Railroad, with its accessibility to so many important markets, makes it the ideal railroad on which to locate pool car operations.

SHORTEST EAST-WEST ROUTE

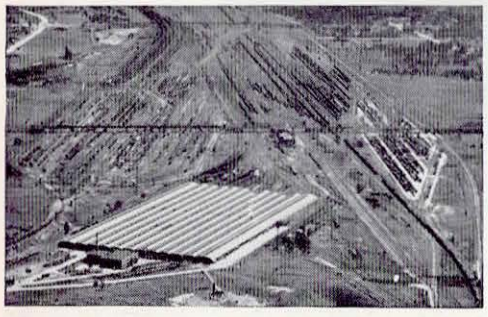
The Better to Serve You—

SUPER-SERVICE STATION for Diesel Freighters



Centralized Traffic Control—now being installed on the high density traffic portion of its double track, is North Western's answer to safer, speedier freight movement. It provides another vital service to shippers when time in transit means dollars saved.

CHICAGO AND NORTH WESTERN SYSTEM



The Proviso Transfer Yard—largest freight marshalling terminal in the world, is an important "first" in North Western service to shippers. Over its 390 tracks, totaling 260 miles in length, classification of carload and l.c.l. freight is handled efficiently, accurately and carefully.

Streamlined as a diesel locomotive itself, is the maintenance service performed in this two million dollar diesel "roundhouse." Here, under pushbutton control, a change of wheels or trucks becomes an operation of minutes. Major repair time is cut to a fraction of that formerly required.

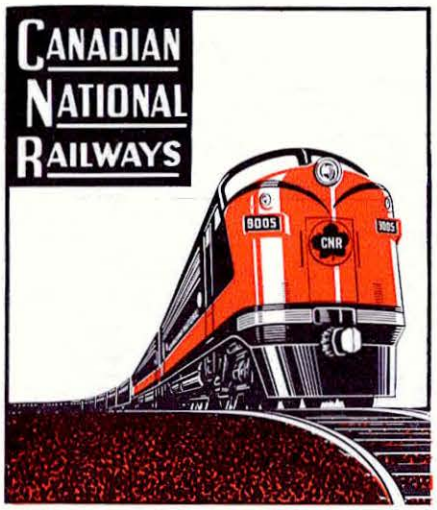
Thus again does North Western take the lead in service to shippers, for this faster, more efficient maintenance means more dependable over-the-road service.

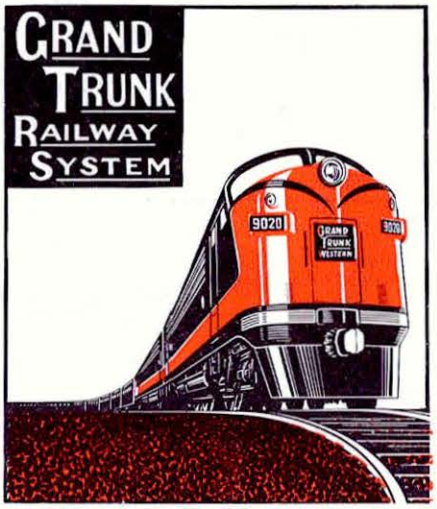
CHICAGO and NORTH WESTERN SYSTEM

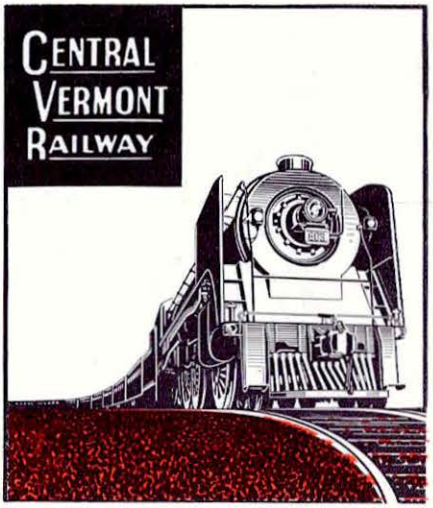
PIONEER RAILROAD OF CHICAGO AND THE WEST—SINCE 1848

LARGEST

RAILWAY SYSTEM IN AMERICA







ONLY CANADIAN NATIONAL SYSTEM SERVES ALL TEN PROVINCES...AND ELEVEN U.S. STATES

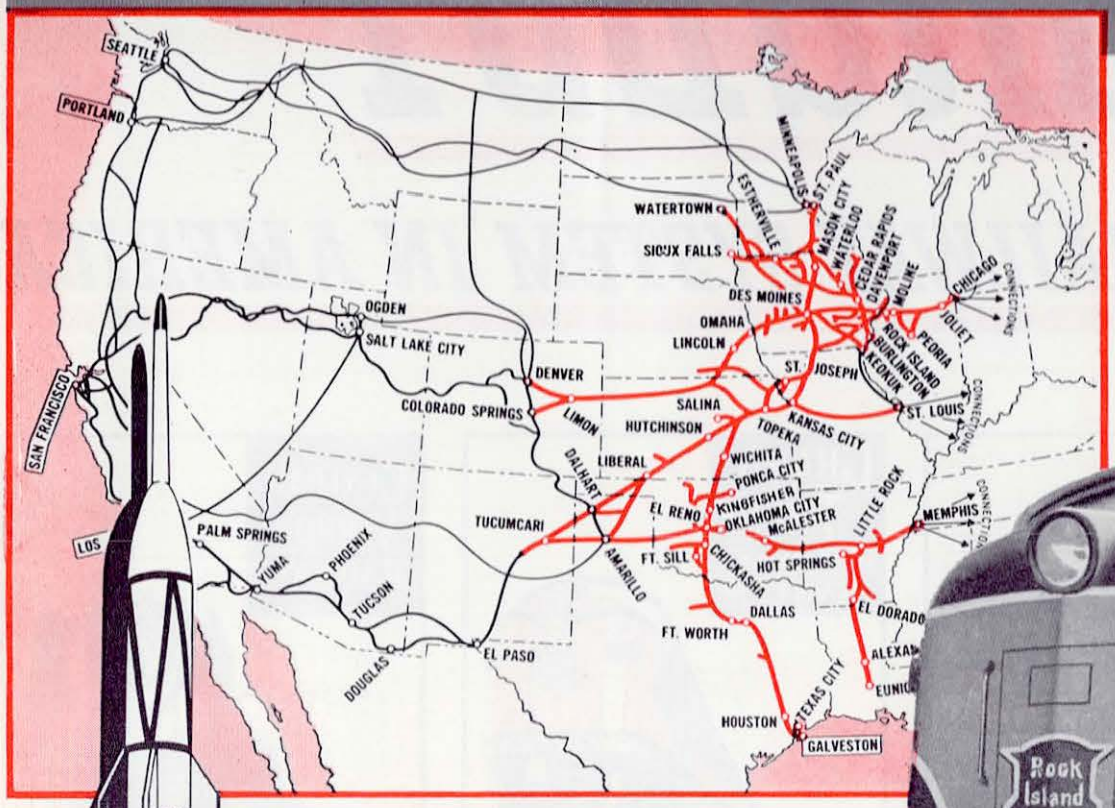
The Canadian National—Grand Trunk—Central Vermont system, largest on the continent, operates 24,402 miles of track . . . connects with U.S. railroads at many interchange border points . . . maintains fast *International* service between the United States and "Everywhere in Canada"!

via CANADIAN NATIONAL

THE RAILWAY TO EVERYWHERE IN CANADA

Railways · Air Lines · Steamships · Express · Telegraphs · Hotels

Proving ground



COORDINATED RAIL-TRUCK SERVICE . . . over 5,000 miles of Motor Transit Lines supplement the rail network. Of special interest to LCL shippers are the 23,000 Package Cars that Rock Island operates annually. These cars are sealed and given expedited service between terminal points.

NEW KANSAS CITY FACILITIES AT ARMOURDALE . . . Rock Island has spent over $1,500,000 for this 43-track layout, including pneumatic car retarders, giant floodlights for night operation. Classifies more than 4,000 cars daily. New icing facilities will service 90 cars at a time.

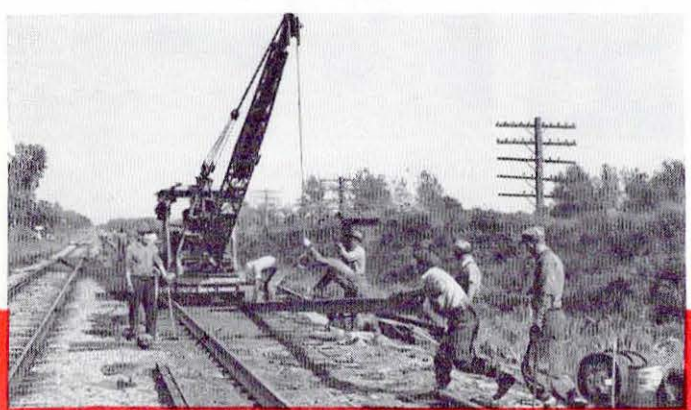
of the Rockets

"At White Sands, N. M., on the Golden State Route, they're experimenting with stratosphere rockets . . . but in Rock Island's 14-state "proving ground", we've been hanging up records with a real, down-to-earth Rocket — the *Rocket Freight!*

"This new concept of freight shipping moves goods *fast* between terminal points — which speeds up deliveries to intermediate cities, too. Today, fast Rocket Freights operate between many major cities on Rock Island Lines — and even more are scheduled for service in the near future. Try this improved service — specify Rocket Freight on your next shipment!"

ROCK ISLAND LINES

THE ROAD OF PLANNED PROGRESS



IMPROVED RIGHT-OF-WAY . . a continuous program of roadbed and right-of-way improvement to eliminate many curves, reduce grades and allow faster running time. Work at present includes road revision between Atlantic and Council Bluffs, Iowa, and Davenport and Kansas City.

NEW FACILITIES AT DALLAS . . . include a new, convenient Freight House . . . sheltered open platforms . . . extensive team tracks at Continental Avenue and Record Road. These improvements, typical of the many being undertaken by Rock Island, mean better handling of both inbound and outbound freight.

The PACEMAKER is now

Expansion of Pacemaker Merchandise Service to New England—Paces New York Central's 1949 Freight Progress Program

SAVING A DAY AT NIGHT for shippers, red and grey *Pacemaker* freight cars now streak through the Berkshires as well as along the Hudson. Today, the twin *Pacemakers* link Boston and New York with key midwestern cities. On their way they serve Worcester, Springfield, Pittsfield, Albany, Utica, Syracuse, Rochester and Buffalo.

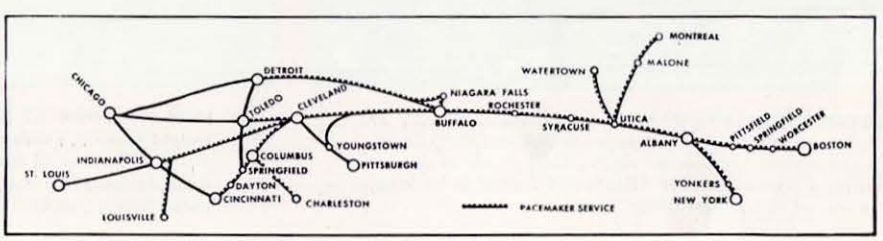
THEY'RE SWIFT AND SMOOTH, these *Pacemaker* cars. They ride on high-speed trucks with stabilized springs. Rubber-cushioned couplers link them into solid

FAST FREIGHT PROGRESS

MODERN MANPOWER TRAINING . . . This theatre car travels from end-to-end of New York Central System . . . with training films that teach latest techniques of fast, careful, freight handling.

MOTORIZED DIVISIONS! . . . New York Central freight house crew with newest mechanical equipment, goes into action. They load and unload merchandise freight at top speed with top care.

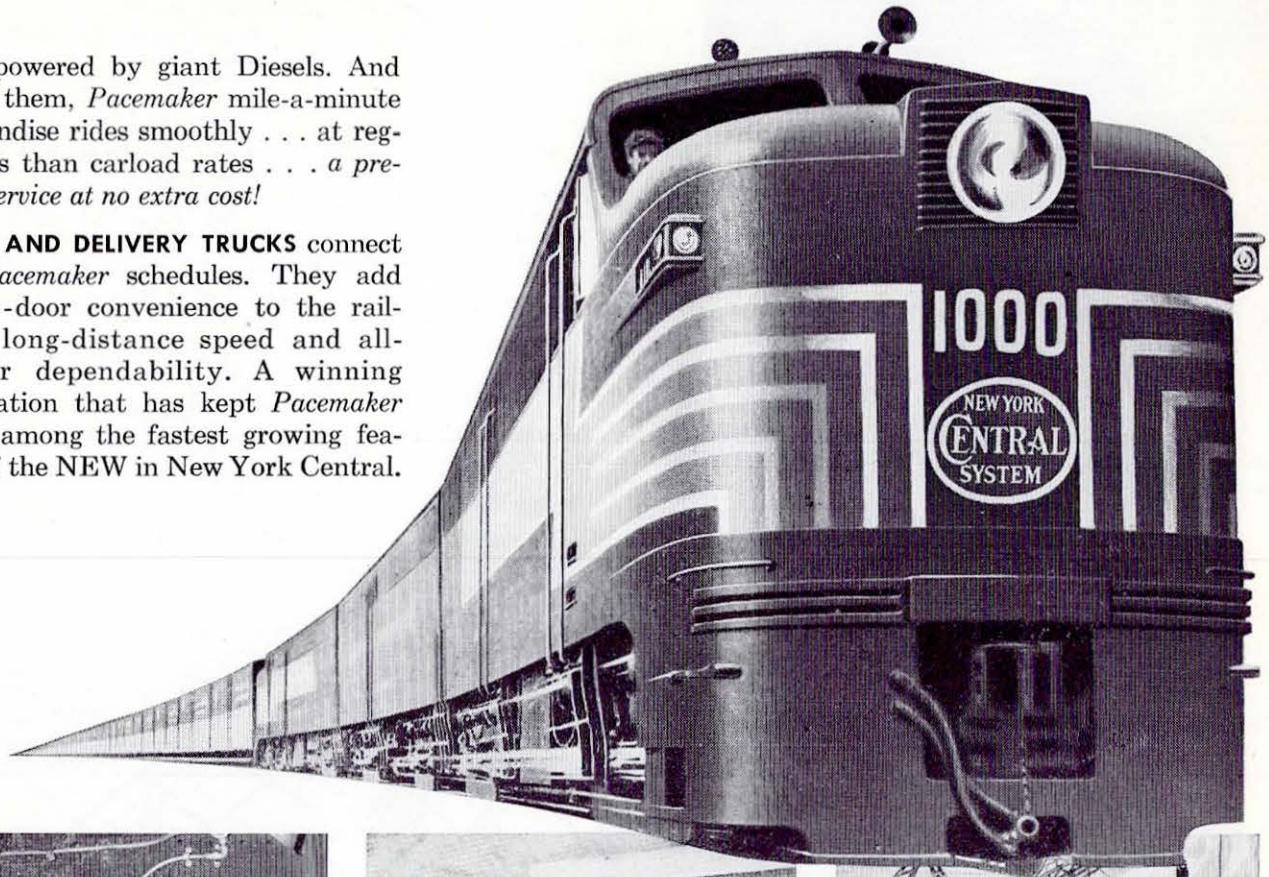
NEW LONG REACH OF PACEMAKER SERVICE



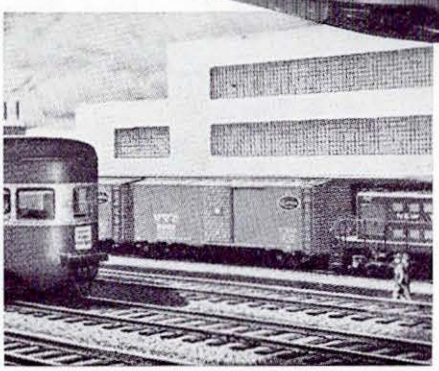
TWINS!

trains powered by giant Diesels. And aboard them, *Pacemaker* mile-a-minute merchandise rides smoothly . . . at regular less than carload rates . . . *a premium service at no extra cost!*

PICKUP AND DELIVERY TRUCKS connect with *Pacemaker* schedules. They add door-to-door convenience to the railroad's long-distance speed and all-weather dependability. A winning combination that has kept *Pacemaker* service among the fastest growing features of the NEW in New York Central.



SWITCHING WITHOUT A HITCH! Smooth yard locomotives are equipped with two-way FM radio telephones at many New York Central freight yards. This means fast, gentle switching . . . regardless of weather.



FINDING "CENTRAL" LOCATIONS — Experts of Central's Industrial Department are helping find strategic sites for a record number of new plants and warehouses in the world's richest market.

SHIPSHAPE AT SHIPSIDE — The great Atlantic ports New York Central serves . . . plus the world-wide reach of its helpful Foreign Freight Department . . . give overseas traders a double advantage.

NEW

NEW YORK CENTRAL

The Smooth Water Level Route

NEW YORK CENTRAL SYSTEM

$18,700,000 and ROAD

$55,300,000
Invested in Improvements 1944 - 1948
Principal Items listed below

New equipment acquired:
- 11 4-unit diesel road freight locomotives
- 53 diesel switching locomotives
- 30 steam freight locomotives
- 10 steam passenger locomotives
- 7,176 freight cars
- 4 carfloats
- 6 steel lighters
- 2 streamlined passenger trains, Wall Street and Schuylkill

Railroad bridges built or strengthened:
100 important bridges, including the new million-dollar bridge over the Schuylkill River at Reading, Pa.

Signal modernization:
Color light signals installed on more than 370 miles of track and 37 interlocking plants modernized.

Engine servicing facilities modernized:
Newberry Junction, Rutherford, Port Reading and Erie Avenue, Philadelphia.

Turn-tables lengthened and strengthened:
Rutherford, Reading, Bridgeport, Erie Avenue and 9th and Green Streets, Philadelphia.

Flood protection:
Tracks being raised and new bridges constructed at several points between Sunbury and Williamsport along the Susquehanna River.

Reading Terminal modernization:
Station and office facilities being improved, with large area to be made available for rental as shopping center.

Reading Lines

READING RAI

for NEW EQUIPMENT IMPROVEMENTS in 1948

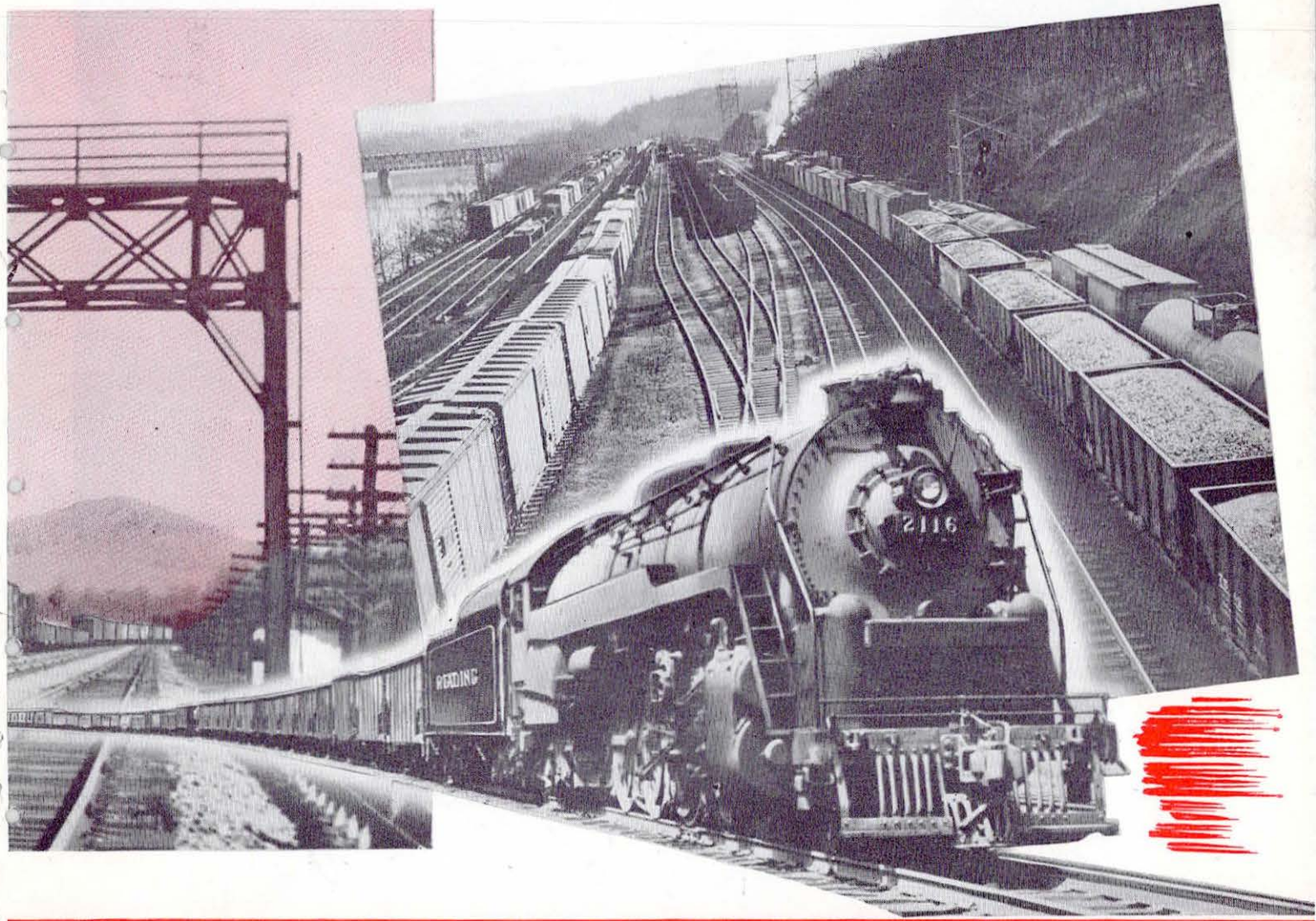
$18,700,000 in 1948 and improvements of $55,300,000 in the 1944-1948 period exemplifies the Reading's long-term policy to make large expenditures for the modernization and rehabilitation of its physical property.

With this modernization program in progress for construction of new motive power, new and rebuilt cars, improvement in roadbed and installation of additional signal and communication facilities, the Reading will be enabled to deliver even faster, safer and more efficient service to shippers and the traveling public.

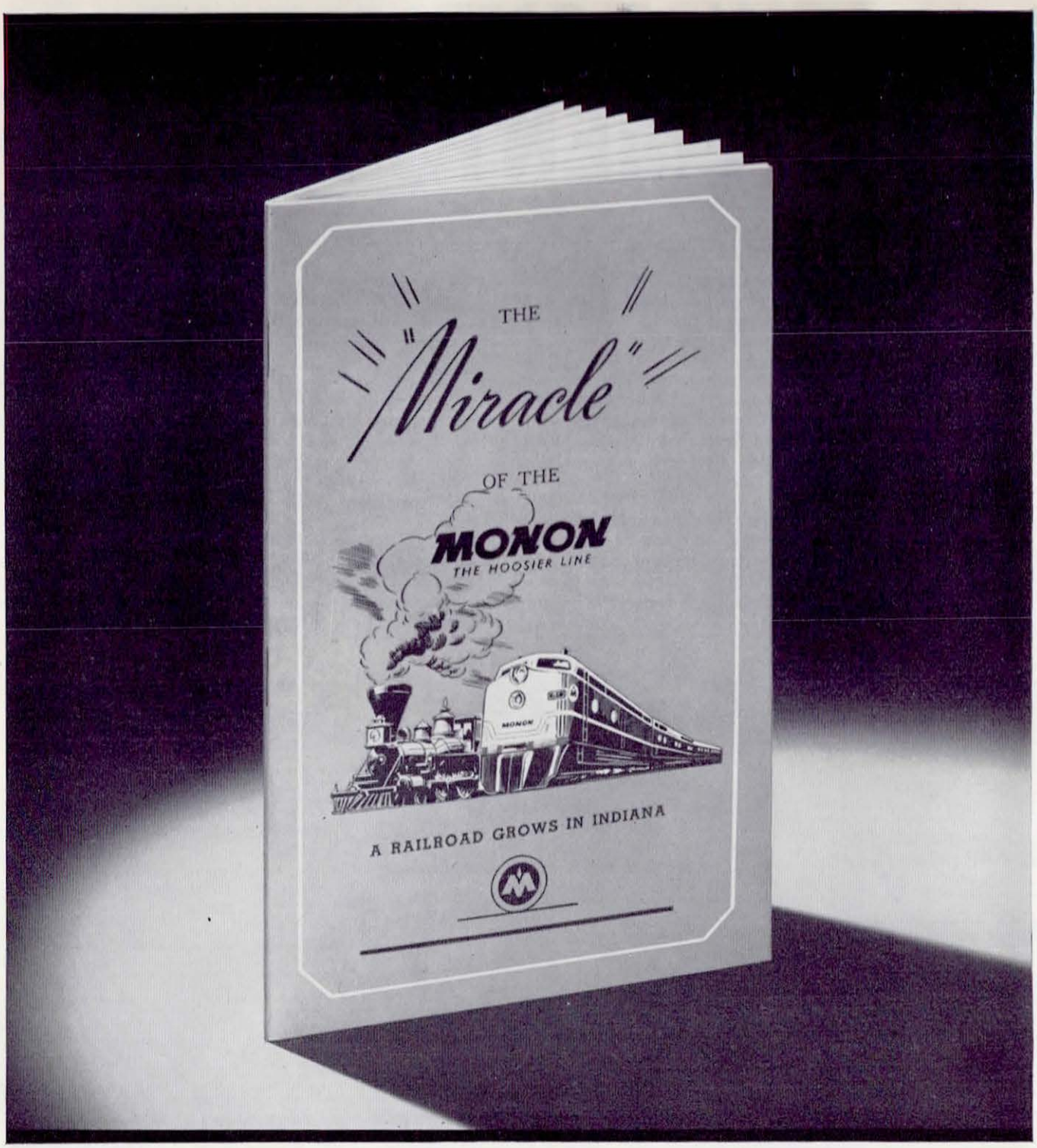
Fast freight schedules—always an important feature of Reading Service, are dependable and safe. And here are some good reasons why. The most modern motive power and freight cars in good condition. More than 71% of the road's main tracks, including all heavy traffic lines, are laid with 130 lb. or heavier rails. Yearly rail renewals call for approximately 15,000 tons of 130 and 140 lb. rail. Approximately 7,800,000 ties, or 98% of the total now in track, are creosoted for longer life and a sounder and safer track structure.

Of Reading's entire mileage, 71% has some form of block signaling and for the past several years an extensive program of standardization and modernization has been under way. The railroad also has under way preliminary engineering studies for centralized traffic control wherein a number of interlockings will be controlled from a central point.

Vast resources and markets, together with unsurpassed transportation facilities, are prompting industries to locate along the Reading. If you are planning expansion or relocation of your plant, have our Industrial Development Department assist in securing the proper site.



LWAY SYSTEM



The swiftly accelerated pace of American industrial progress has intensified the demands upon the railroads to produce higher standards of service at lower unit costs. *Monon* is cutting the Gordian knot of this transition, through complete modernization of its equipment, its roadway, and its facilities.

John W. Barriger

President

Monon Centennial Address
French Lick, Indiana
August 6-7, 1947

The Human Side of MONON PROGRESS

The "goal" of Monon modernization plans was, *and still is*—

> *. . . such a high degree of service that railroads will be preferred over all other types of modern transportation, by both shippers and passengers, in the area they serve.*

In drafting these plans the Monon realized, of course, that modern diesel-electric locomotives and freight and passenger cars, improved track, adequate yards and auxiliary facilities, ample clearances, and so on through the components of the railway plants, were indispensable to progress.

But, from the very first, the Management has also been keenly aware of the fact that finest physical equipment, *alone*, is not enough—that the rejuvenation of the human equipment of the road—the *people*—was equally important if our goal was to be reached. For, after all, it is the *human* equipment that translates the *physical* equipment into *service*.

The New Monon today offers Service WITH A PLUS to both shippers and passengers because of a well organized effort to that end. And the PLUS is the *human element* —the people of the Monon.

Their fine spirit, their teamwork, their important contribution to Monon progress is the result of carefully planned management-employee relations programs of which we are very proud.

Our booklet, "The Miracle of the Monon," played its part in this effort, by helping to make the Monon organization, and its patrons, realize fully that Monon means business.

Warren W. Brown

Vice President, TRAFFIC

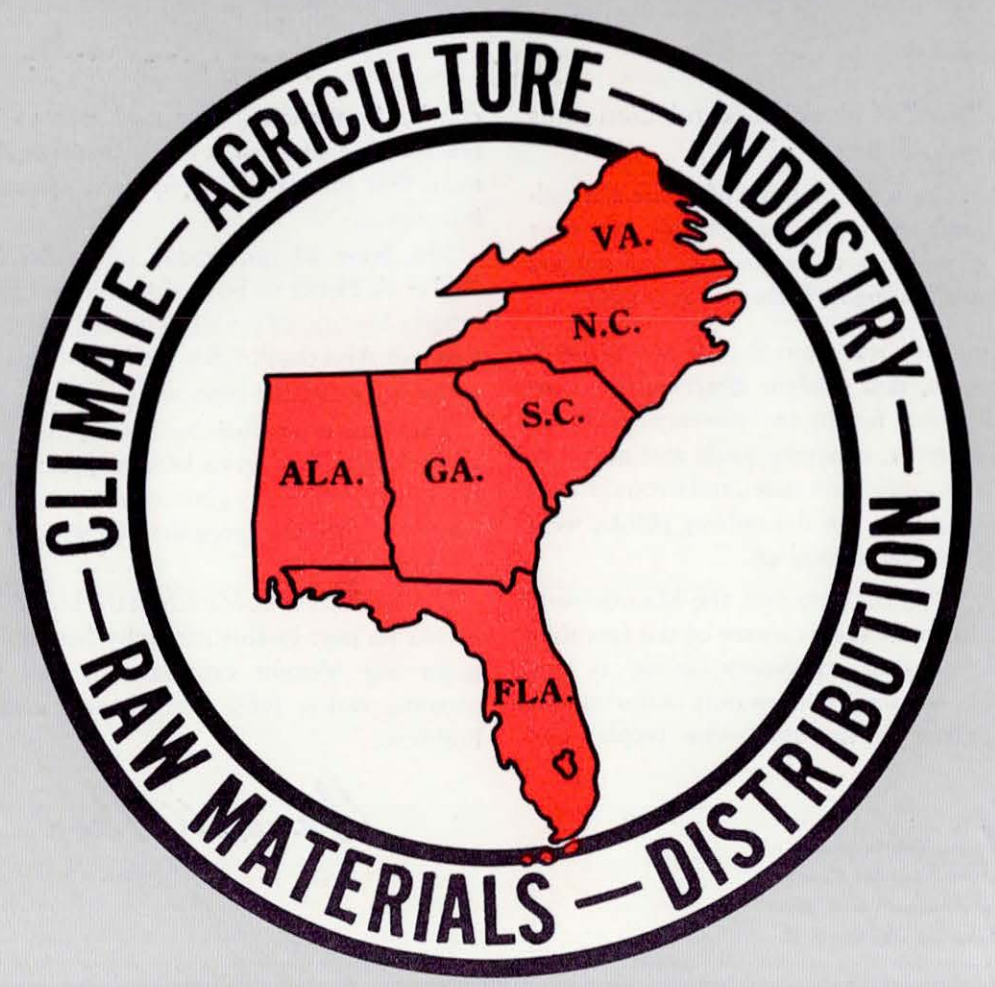
For a complimentary copy of "The Miracle of the Monon" address "Monon", 608 South Dearborn St., Chicago 5, Ill.

MONON

THE HOOSIER LINE

CHICAGO, INDIANAPOLIS AND LOUISVILLE RAILWAY COMPANY

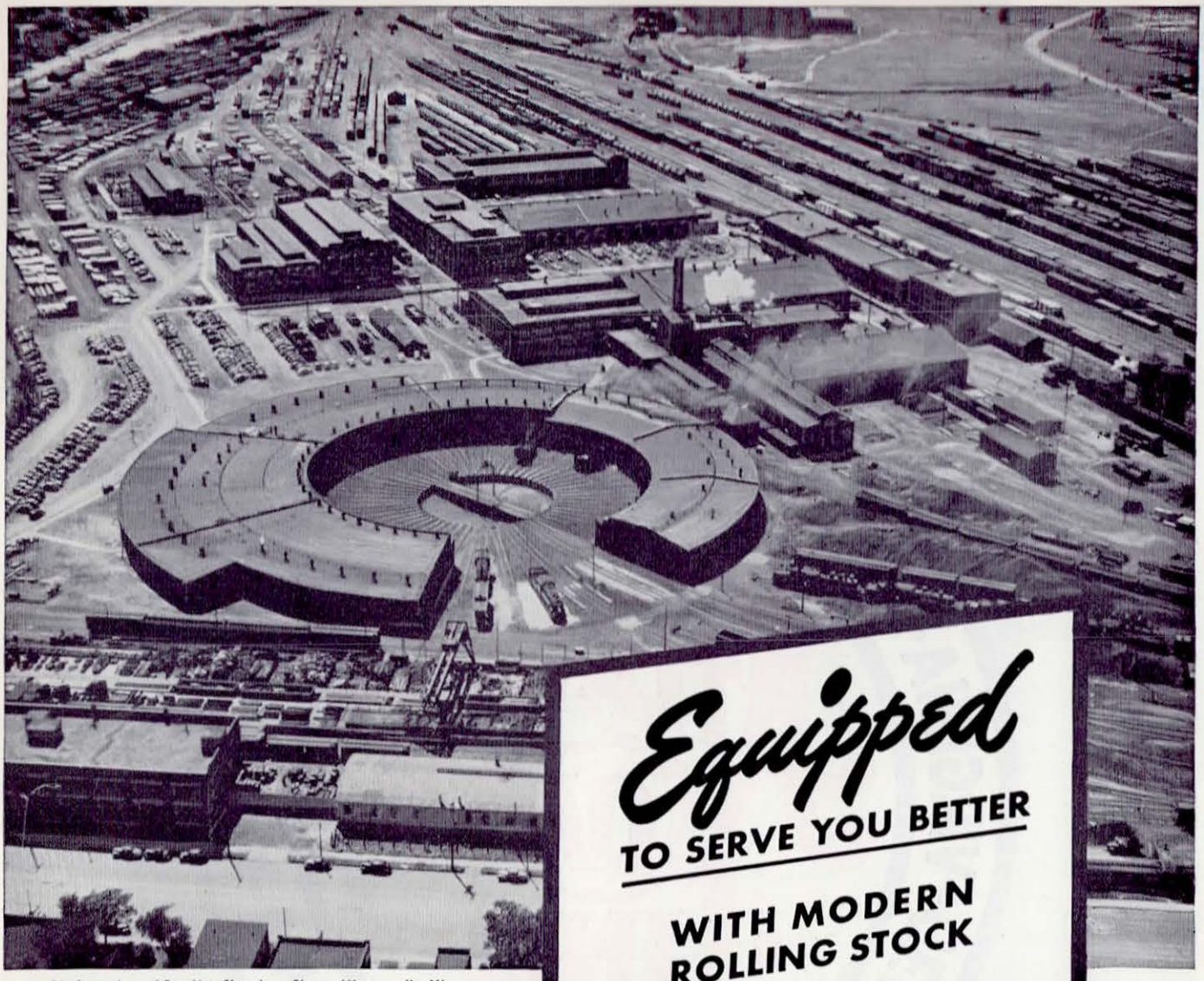
THE TERRITORY



With favorable climate, dependable labor, abundant raw materials, ample power, and ready access to markets, the southeast's continued industrial expansion is inevitable.

THE RAILROAD

With double-daily, dieselized, overnight through freight trains between important southeastern cities, and fast dependable freight service to and from the east and west.



Airplane view of Soo Line Shoreham Shops, Minneapolis, Minn.

Equipped TO SERVE YOU BETTER

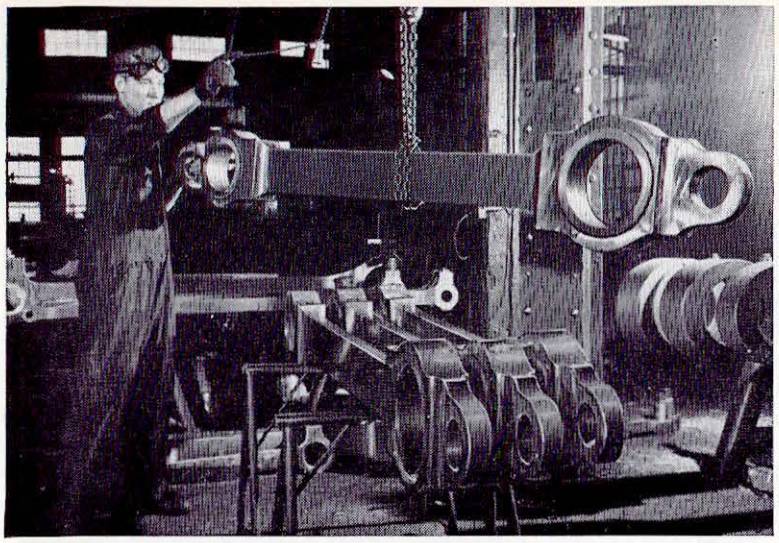
WITH MODERN ROLLING STOCK

Plus TRAFFIC KNOW-HOW

There's more to Soo Service than a fast-growing fleet of freight Diesel-electrics. *More* to Soo Service than the 200 new Gondola cars being constructed at our Fond du Lac Shops. *More* to Soo Service than the 550 new freight cars that will roll off our shop production lines this year.

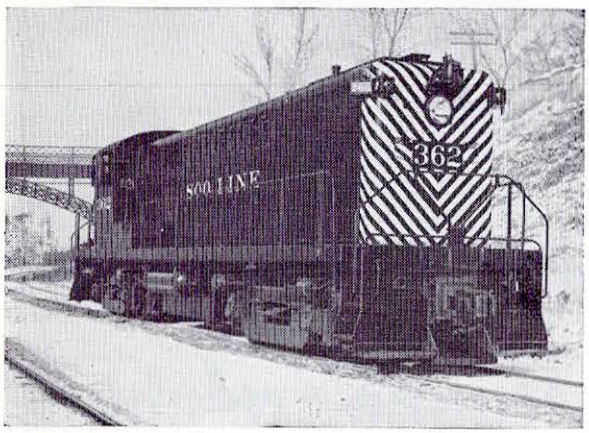
Fast dependable Soo Service could not exist without constant, precision servicing of *all* our rolling stock . . . without helpful, experienced "servicing" of our shippers.

Take a look behind the scenes. See how this all-around servicing keeps the freight *rolling on and to* the Soo Line.

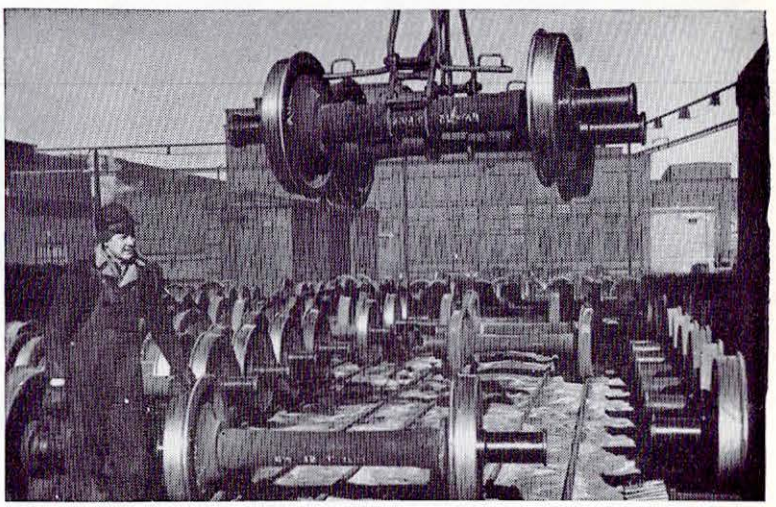


FLASHING DRIVING RODS pound thousands of tons of freight yearly over the 4200 miles of Soo Line track—and our Shoreham Shop machinists keep 'em flashing! They "breakdown" Soo locomotives regularly—check vital parts for the slightest flaws—machine replacements parts to polished perfection. Your freight doesn't wait on the Soo Line!

MAINTENANCE CHECK-UP is waiting for this Soo Line Diesel-electric locomotive. Thorough inspections by skilled mechanics at regular intervals keep Soo Line Diesel-electrics in tip-top shape—prevent service-slowing breakdowns. With these streamlined power-houses pulling a considerable percentage of our freight traffic, your shipments reach their destination faster on the Soo Line.

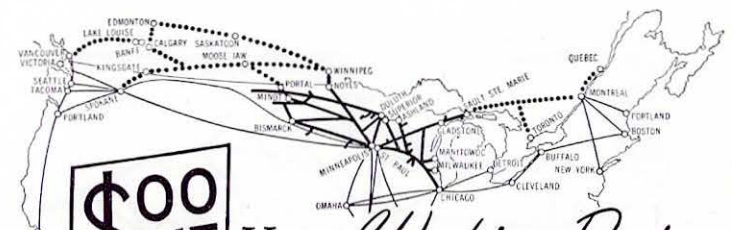


MIGHTY MIDGETS of Soo Line freight service are Diesel-electric switch engines. Quickly they hustle cars to make up trains at a pace that permits accurate, timely dispatch. With emphasis on efficient yard practices and modern equipment, your freight spends a minimum of time on railyard sidings when you ship Soo Line.



WHEELING THE FREIGHT to over 500 Upper Midwest cities on the Soo Line takes plenty of sound wheels. Our Shoreham Shop experts keep us in steady supply. Car trucks are removed and inspected at periodic intervals. With damaged parts replaced or completely new trucks provided, your freight rolls smoothly on the Soo Line.

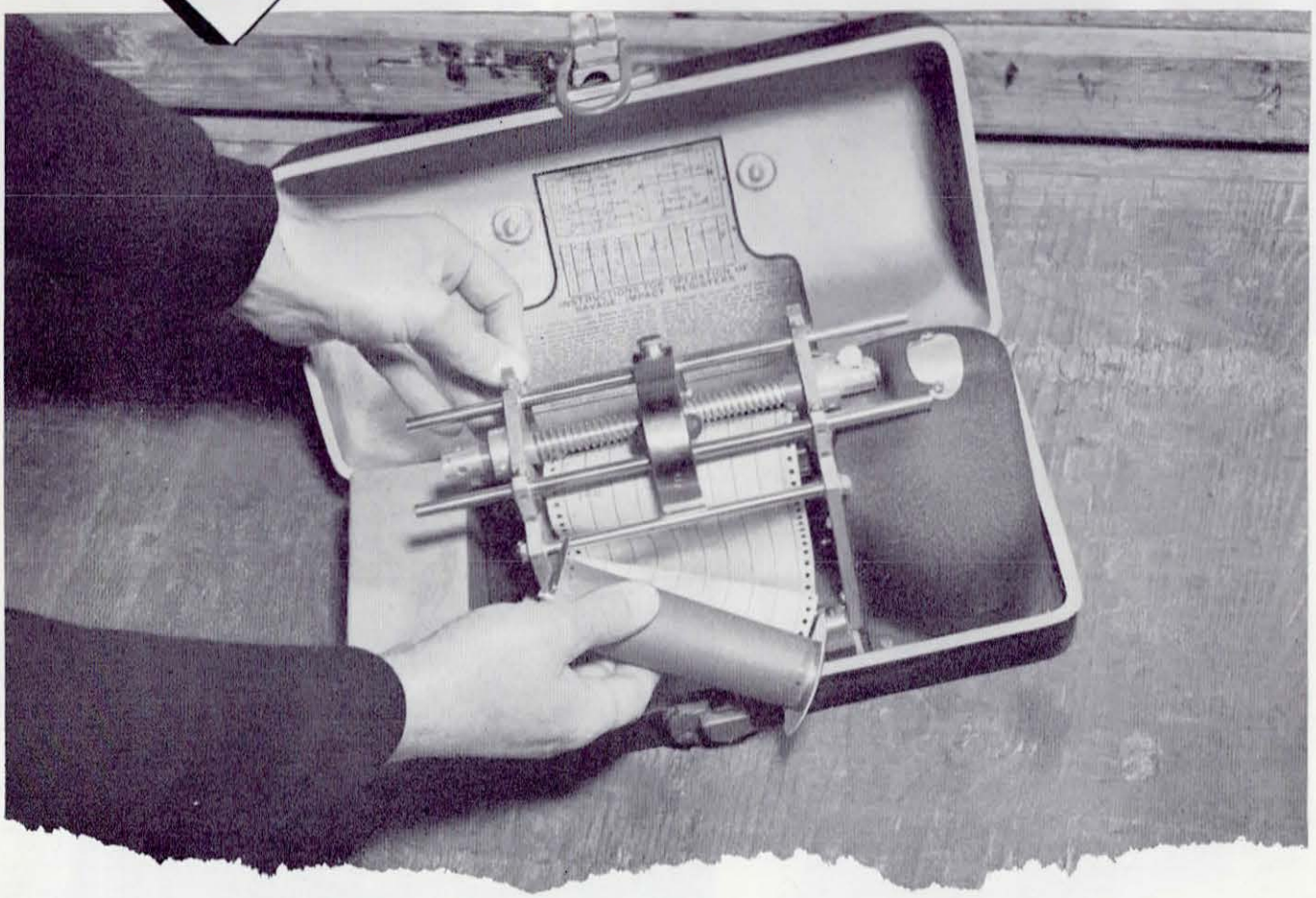
SERVICING SHIPPERS throughout the country are Soo Line Agents of long experience. Averaging better than 30 years of traffic service, they have fingertip knowledge of rates, routing and shipping problems. Their knowledge and helpful services are at your disposal—no further away than your telephone. Give your Soo Line agent a call—he's the man with answers that can mean better shipping for you.



SOO LINE

Your *Working Partner*
7 Days a Week

ERIE . . . Mark of PROGRESS in Railroading

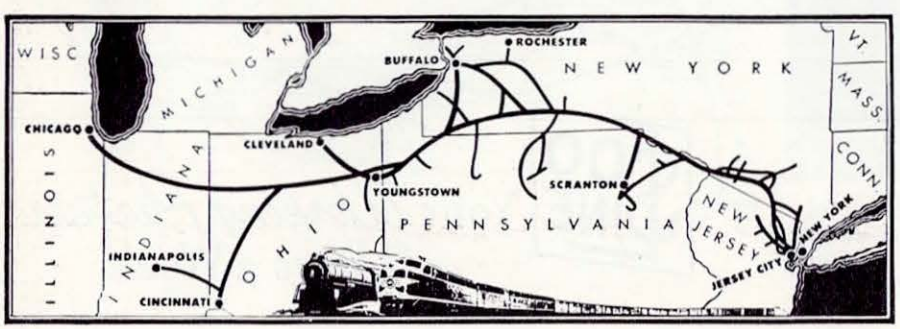


Our helping hand for fragile freight

THE LITTLE MACHINE shown here plays a big part in bringing fragile freight, such as glassware and furniture, safely to its destination. This device, called an *impact recorder,* is used by Erie to help maintain good handling of all kinds of shipments.

Fastened to the floor of a freight car, this sensitive instrument automatically measures and registers on paper tape variations on the smoothness of the ride. Erie keeps a large number of these impact recorders in service, constantly checking and rechecking car handling conditions on its thousands of miles of tracks.

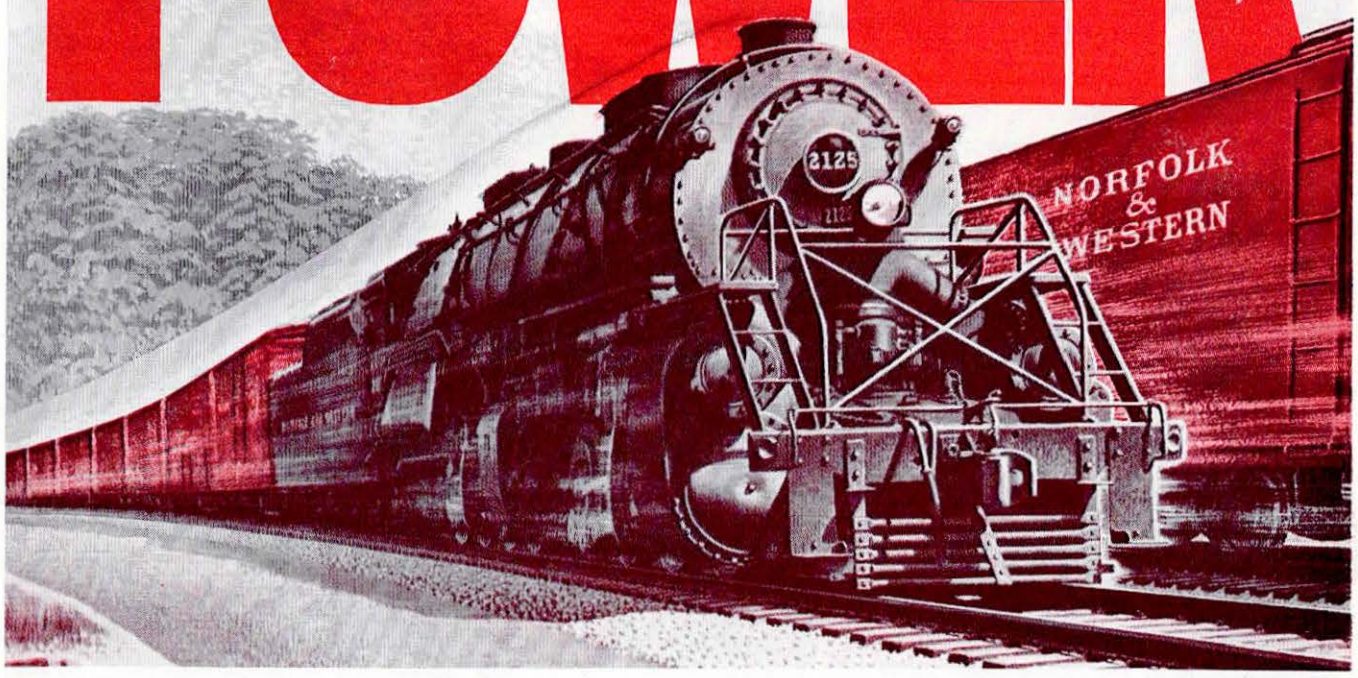
Use of such modern devices, plus advisory service on good packing and proper loading, have gained the Erie a nationwide reputation for safe, dependable transportation...a result of practicing *progress in railroading.*



Erie Railroad

Serving the Heart of Industrial America

POWER



The significance of the American railroad as a factor in the strength and power of America — in peace and in war — is undisputed.

Each time any of the railroads of America improve facilities for moving goods and people more efficiently, the strength and power of this nation is definitely improved.

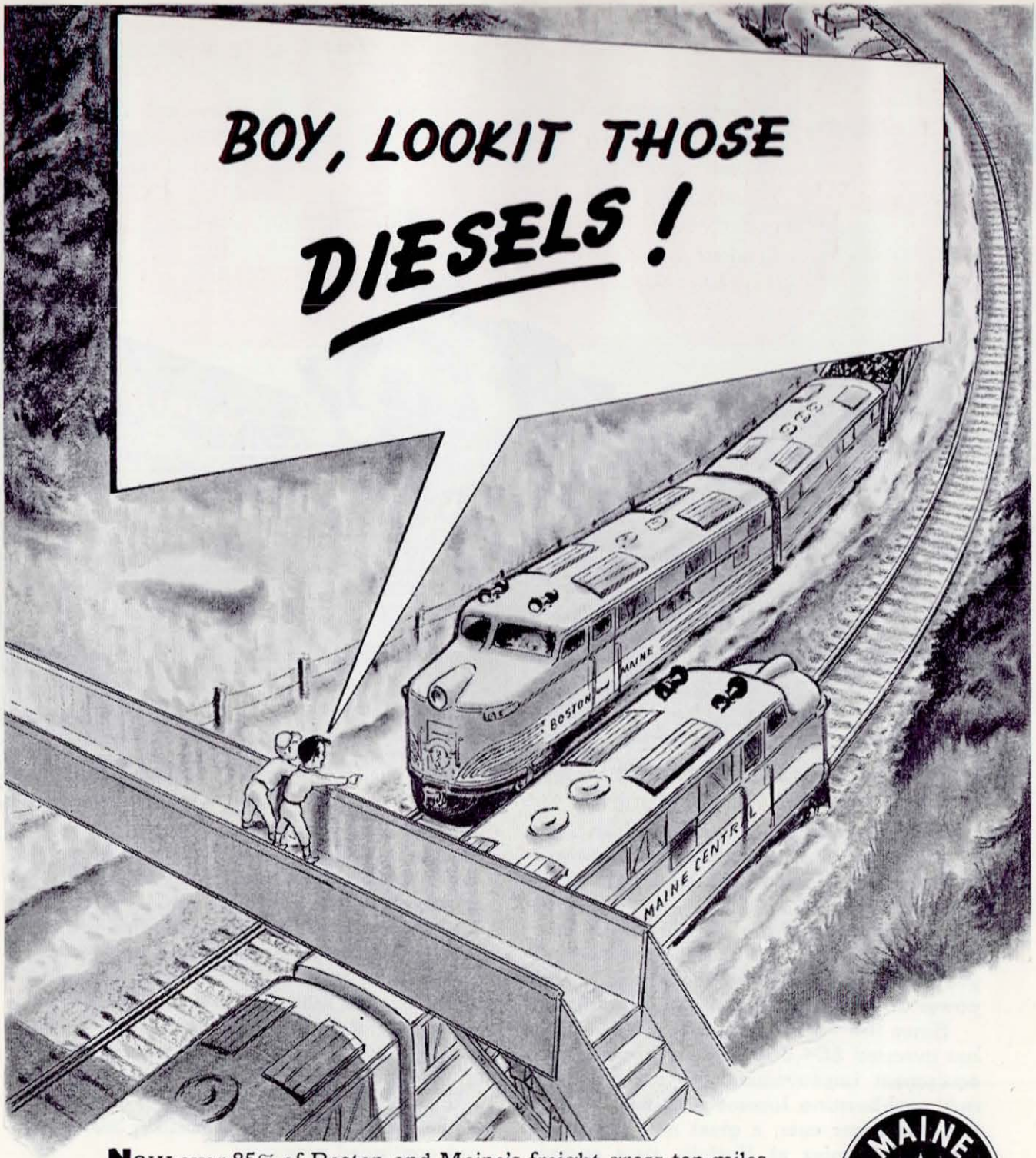
Since the war, the Norfolk and Western has invested $54,559,000 in property and equipment improvements — for powerful new coal-burning locomotives, new freight and passenger cars, a great new merchandise freight pier at Norfolk, new engine terminals, modernization of passenger stations, new offices, better tracks and grades, improved signal system, stronger bridges, expanded yards, and a multitude of other betterments from one end of the line to the other. The program of improvements continues — the railroad is scheduled to spend $43,600,000 more in 1949 and 1950.

This is money invested in better and better railway transportation, and in turn, an investment in the continued strength and power of America — concrete evidence of the railway's faith in American business and continued progress.

NORFOLK and WESTERN

Railway

PRECISION TRANSPORTATION



Now over 85% of Boston and Maine's freight gross ton miles and nearly 60% of Maine Central's freight gross ton miles are handled by Diesel Electric Locomotives.

This means faster schedules, smoother handling and on-time deliveries for you and your customers.

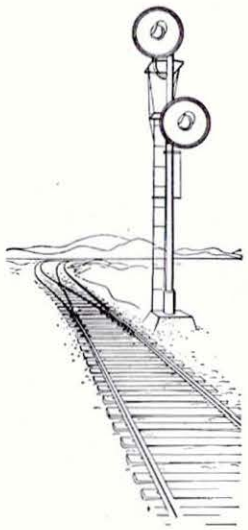
Continuously these two railroads are improving their facilities to better serve a great industrial region — Northern New England.

MAINE CENTRAL RAILROAD

BOSTON and MAINE RAILROAD

"MINUTE MAN SERVICE"

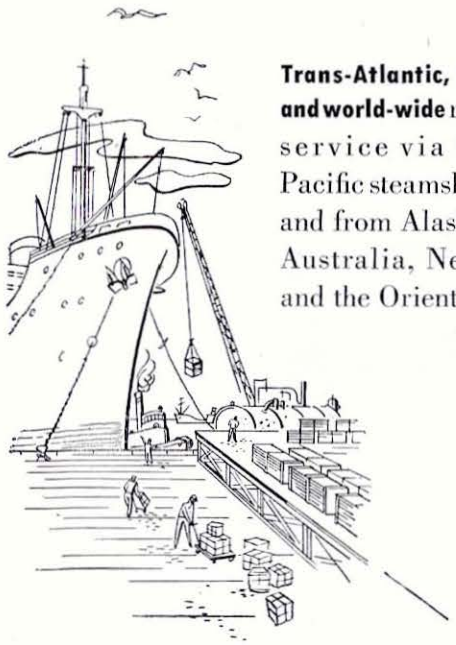
Fast! Dependable! Efficient! That's why successful business firms in the United States and Canada always count on Canadian Pacific for completely coordinated shipping facilities.



International and inter-state all-rail service...with differential rates from New York and New England to points in Western United States and Canada.

Canadian Pacific

gives you a world of FREIGHT service

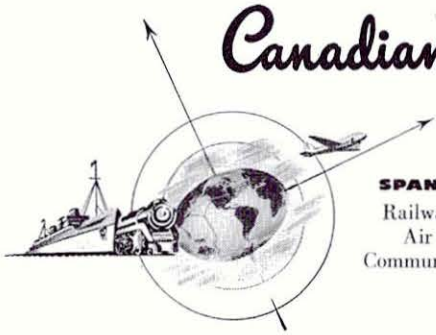


Trans-Atlantic, trans-Pacific and world-wide rapid freight service via Canadian Pacific steamship lines—to and from Alaska, Europe, Australia, New Zealand and the Orient.

Canadian Pacific Great Lakes steamship service—connecting with rail freight service for important centers.

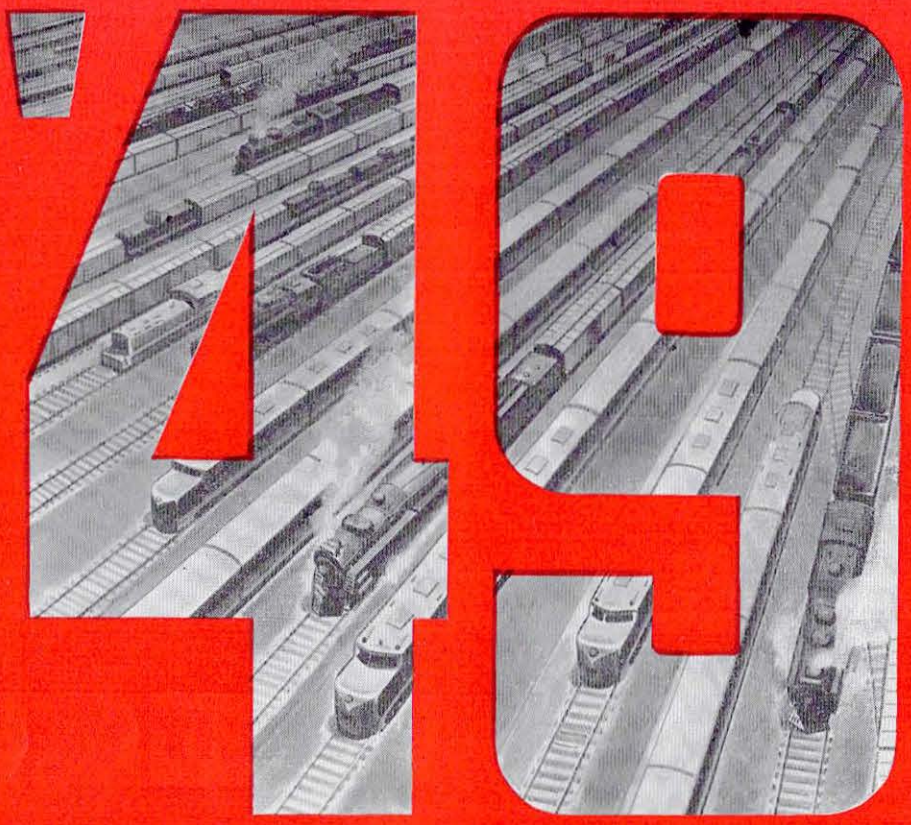
Whether you're in the United States or Canada, you can depend on Canadian Pacific service for your local, transcontinental, world-wide freight shipments!

Canadian Pacific



SPANS THE WORLD
Railways • Steamships
Air Lines • Hotels
Communications • Express

A FINER FRISCO IN...



This year great strides have been made in Frisco's multimillion-dollar, system-wide modernization program. Today the Frisco provides more efficient service and greater capacity than ever before to shippers from, to and through the Southwest and Southeast.

More Diesel locomotives, new improved hopper, box and gondola cars—many miles of new track—expansion of Centralized Traffic Control—enlargement of maintenance service facilities . . . these are only part of the improvements that mean a Finer Frisco in '49!

Complete details of fast freight and passenger schedules will be cheerfully furnished by your Frisco Representative, located in major cities . . . or write or wire:

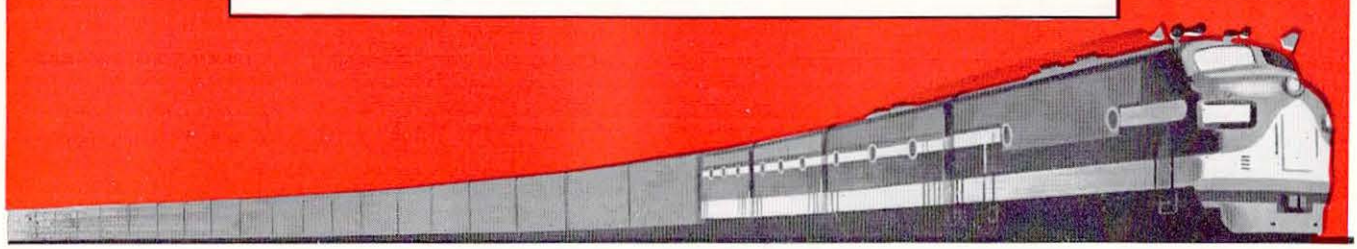
FRISCO, Frisco Building, St. Louis 1, Missouri

TRAVEL FRISCO...SHIP FRISCO...FOR FINER TRANSPORTATION

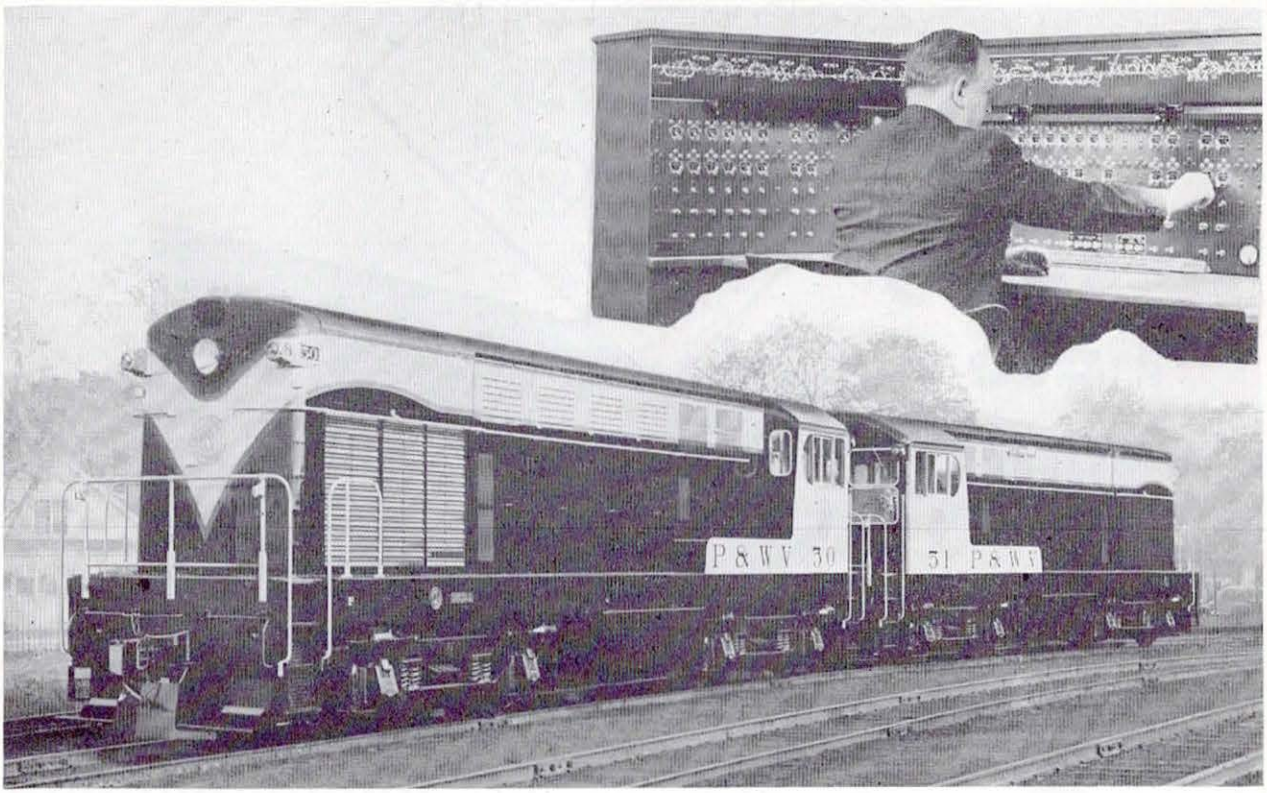
FRISCO

Serving:

MISSOURI • KANSAS • ARKANSAS • OKLAHOMA • TEXAS • TENNESSEE • MISSISSIPPI • ALABAMA • FLORIDA



The Pittsburgh & West Virginia Railway Company



Modern

- OPERATIONS
- MOTIVE POWER
- EQUIPMENT
- ROAD

PITTSBURGH & WEST VIRGINIA RAILWAY — P&WV

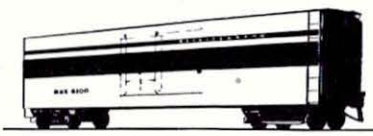
— welcome the opportunity to serve you

RAILWAY EXPRESS AGENCY

Keeping Pace

... WITH RAIL PROGRESS!

New and better w ·s to ship by rail is high on the progressive railroad program designed to offer ever-increasing advantages to the industry's customers. RAILWAY EXPRESS is an integral part of our nation-wide rail system. Every community served by rail is served by Railway Express. And Railway Express is keeping pace with modern transportation developments . . . with new equipment and the consistent adoption of improved methods . . . **in the best interests of the shipping public.**



New **"SILVER REEFERS"**

...Doing "double duty" as modern refrigerated and general merchandise cars.

New **MOTOR VEHICLES**

... Completing the chain from shipper to consignee with pick-up and delivery service.

RAILWAY EXPRESS AGENCY

NATION-WIDE RAIL SERVICE

4500 train personnel—a fleet of 72 Diesel and 80 steam switchers—30 strategically located public delivery yards plus many additional modern facilities, gears the T.R.R.A. to proficiency in meeting the transportation needs of the Metropolitan St. Louis industrial empire and the nation . . . the year around.

Service around the clock . . .

Boxing the compass, the nation's arterial rail routes radiate North— South— East and West through Metropolitan St. Louis. The T.R.R.A. performs the indispensable job of welding every one of these routes together. Exclusive operation of two bridges spanning the Mississippi River—almost 400 miles of track and 60 years' experience in interchange and industrial switching equips the T.R.R.A. to do an outstanding job of promoting scheduled deliveries of rail traffic.

N

E

W

S

TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS

TRRA

Hundreds of industries and firms are served directly from T.R.R.A. rails. A location on the Terminal is equivalent to being served by everyone of the trunk line railroads serving the St. Louis gateway.

TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS

Specialized . . . interchange and industrial switching service.

in the SOUTHEAST!

Modern, efficient railroad transportation is high on your list of requirements when planning for the location of new or expanded industry. The progressive Southeast offers, among many advantages, the Seaboard brand of railroad service which means fast distribution for your products, regionally and nationally.

Choice industrial sites are available at Seaboard trackside through the states it serves — Virginia, North Carolina, South Carolina, Georgia, Alabama and Florida. Adaptable to many types of manufacture and distribution, these properties are convenient to sources of raw materials, to adequate labor reservoirs, and to low-cost utilities. The Southeast's climate lends itself to assured year-round operations.

This industrial swing toward the Southeast is significant news to management everywhere. Seaboard salutes its new neighbors along its busy right-of-way, and invites others to consider the many advantages to be found in this progressive region.

World Trade Brings Goods and Good Business — World Trade Week May 22-28, 1949

SEABOARD

AIR LINE RAILROAD COMPANY

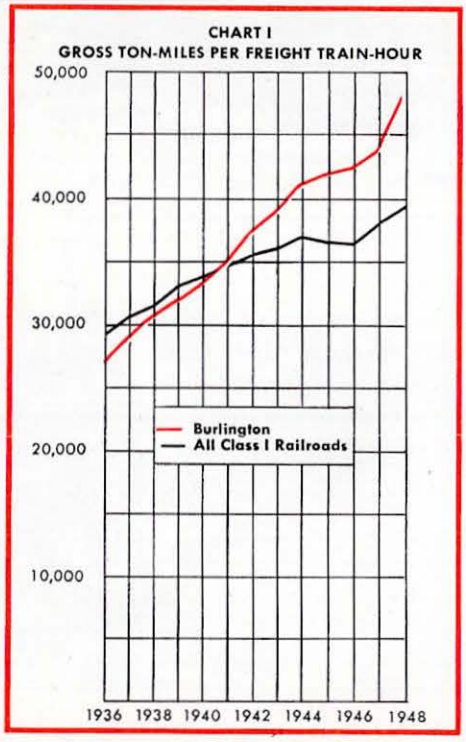
THROUGH THE HEART OF THE SOUTH

WE'VE LEARNED A LOT ABOUT Freight Progress IN OUR FIRST 100 YEARS!

• Over the years, the BURLINGTON has invested vast sums in the equipment, plant and right-of-way needed to improve its freight service. It constantly strives to serve more people better, through more efficient transportation.

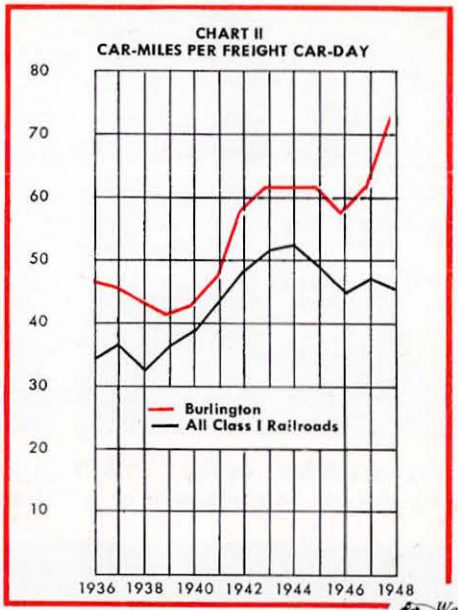
The charts shown here prove how that investment has paid dividends to shippers.

The Burlington, long a leader, looks forward to its second century with confidence. And the Burlington will make more records for railroading efficiency through the years ahead.



The BURLINGTON has consistently increased its freight tonnage per train hour; its progress has brought the Burlington well above the national average.

The BURLINGTON has "kept 'em rolling"—utilizing freight cars efficiently in both peacetime and wartime.



BURLINGTON LINES

Chicago, Burlington & Quincy Railroad • Colorado and Southern Railway
Fort Worth and Denver City Railway • The Wichita Valley Railway
Burlington-Rock Island Railroad

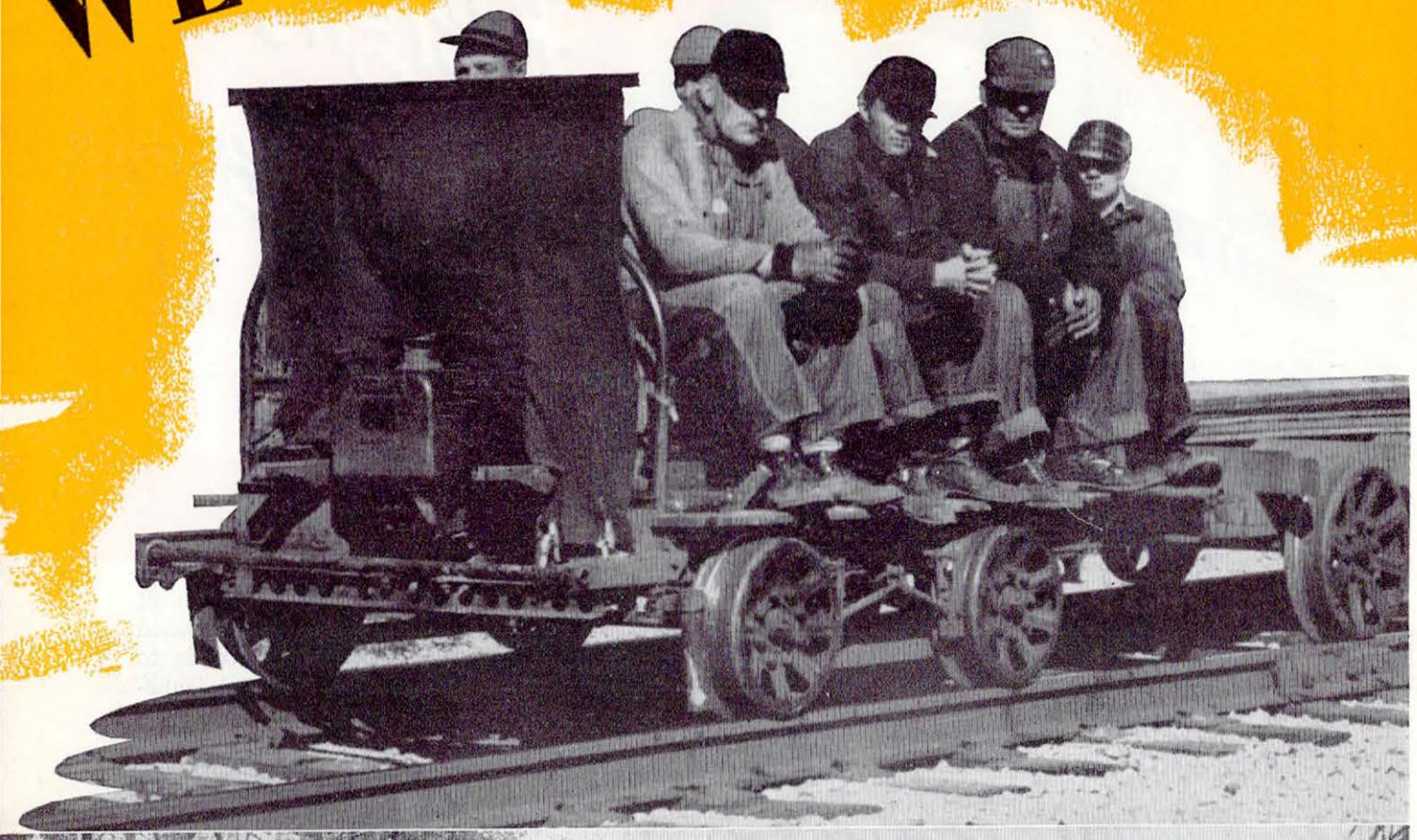
Everywhere West

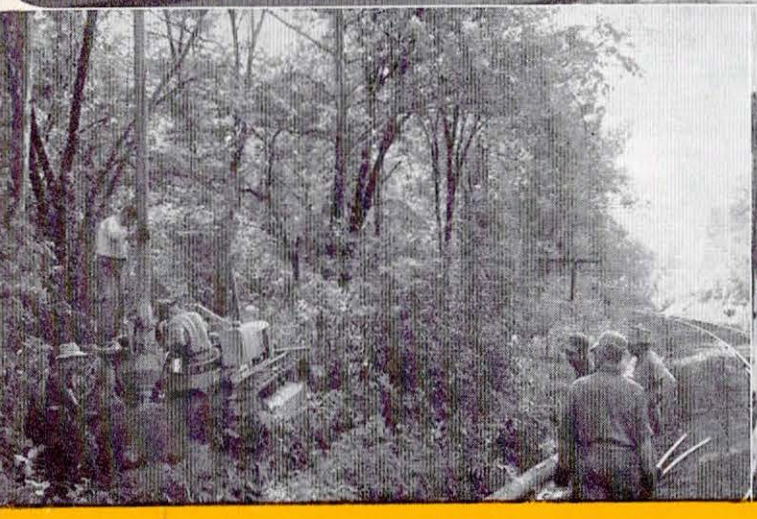
Way of Zephyrs

BURLINGTON'S 100th ANNIVERSARY · 1849-1949

Burlington Route

WE'VE BEEN WORKIN





Rebuilding telegraph lines on the T. P. & W. right-of-way, using an earth-borer mounted on a tractor.

New, heavier 115 lb. rail is shown being laid on the Western Division of T. P. & W.

TOLEDO, PEORIA & WESTERN RAILROAD

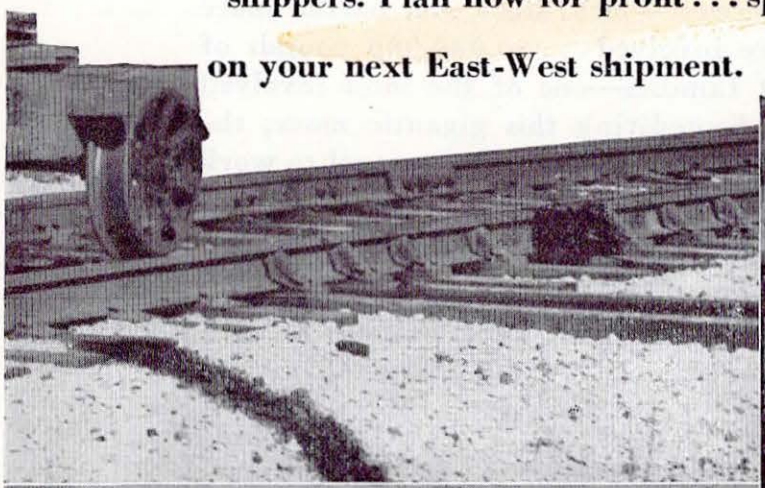
The road that's best . . . links East and West

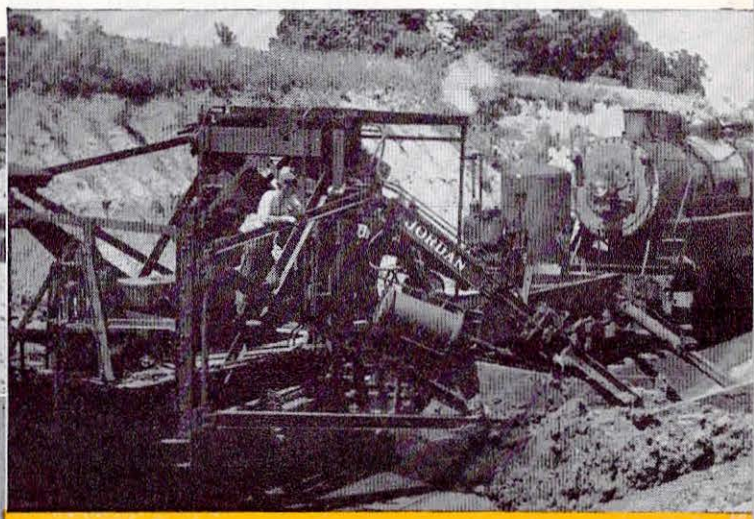
GENERAL OFFICES: PEORIA, ILLINOIS

Offices in twenty-one principal cities

G ON THE RAILROAD

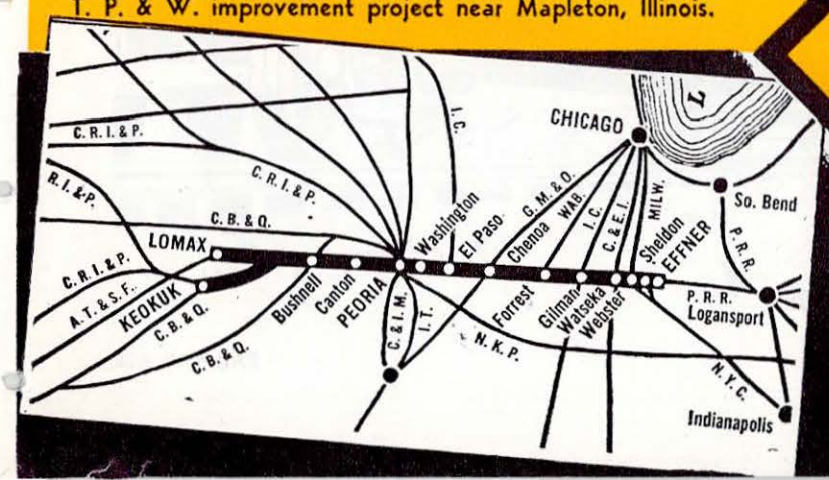
♦ We've been busy modernizing the entire T. P. & W. line, from Effner, Indiana to Lomax, Illinois to Keokuk, Iowa! New telegraph communications . . . improved bridges and stations . . . heavier 115 lb. rail and 1st class road bed for our new Diesel equipment—it all means better-than-ever service to T. P. & W. shippers. Plan now for profit . . . specify T. P. & W. on your next East-West shipment.





Special equipment mounted on a T. P. & W. flat car cleans side ditches and widens cuts along the T. P. & W. route.

Better ballasting for a better road bed is the story of this T. P. & W. improvement project near Mapleton, Illinois.



T.P.&W.

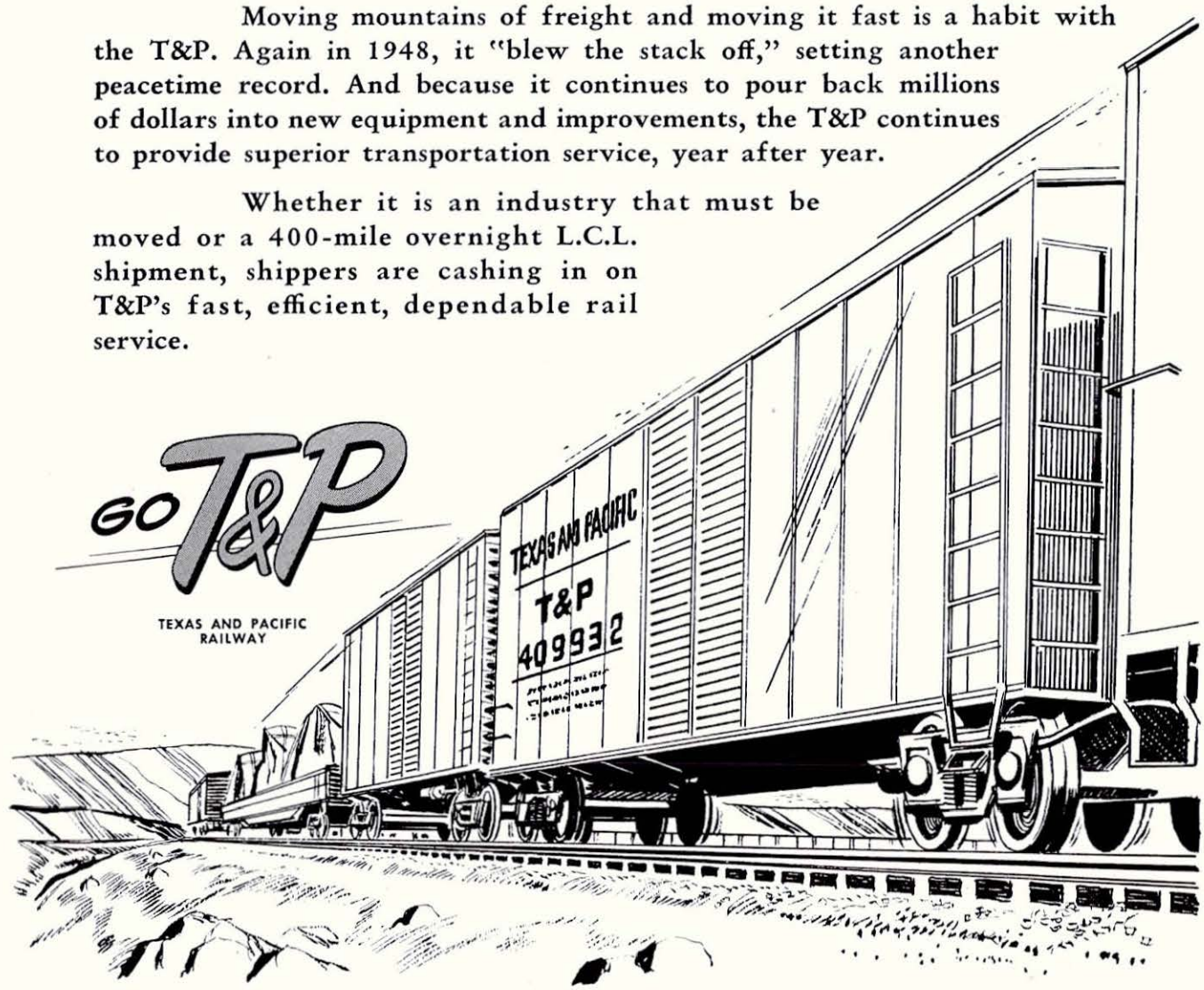
An Industry Moves Across the Continent.. ON WHEELS!

T&P helps expedite the nation's largest Industrial Move

LAST FALL, one of the largest manufacturing plants in America moved across the continent to the Southwest—lock, stock and barrel. More than 1,000 carloads of equipment were involved . . . 50,000,000 pounds of material . . . 2,000 machines and 1,500 families—one of the most involved transportation operations on record! Expediting this gigantic move, the Texas and Pacific Railway put its facilities, equipment and personnel to work to help relocate a mighty industry in short order.

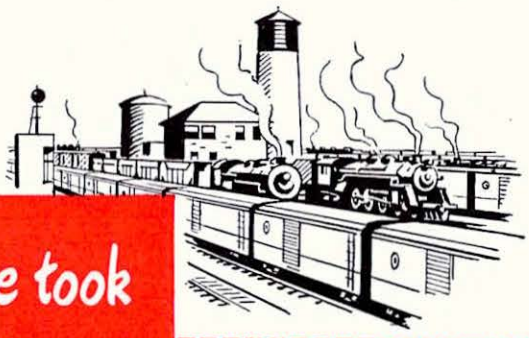
Moving mountains of freight and moving it fast is a habit with the T&P. Again in 1948, it "blew the stack off," setting another peacetime record. And because it continues to pour back millions of dollars into new equipment and improvements, the T&P continues to provide superior transportation service, year after year.

Whether it is an industry that must be moved or a 400-mile overnight L.C.L. shipment, shippers are cashing in on T&P's fast, efficient, dependable rail service.



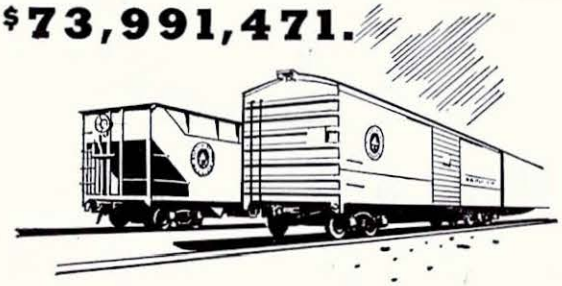
NEW COAL & ORE FACILITIES
$14,500,184.

IMPROVEMENTS THROUGHOUT LINES
$35,923,192.



Steps we took for our New Look

NEW FREIGHT CARS, ETC.
$73,991,471.



NEW LOCOMOTIVES
$27,464,658.

To give you finer Freight Service the Baltimore & Ohio has spent, in the last three years, $173,618,959. Constantly *doing things* better—the B & O way—means vast expenditures. All this adds up to better facilities, faster trains, and dependable service. We pay what it takes to *have* what it takes.

Those three years of "doing things better" saw 212 new locomotives on our rails, together with 19,139 new freight cars. They saw new classification yards and extensive terminals; heavier rail to carry our trains, better signals to speed them, modern communications to report their positions and furnish on-the-spot location of cars for customers; efficient, latest-type coal and ore facilities.

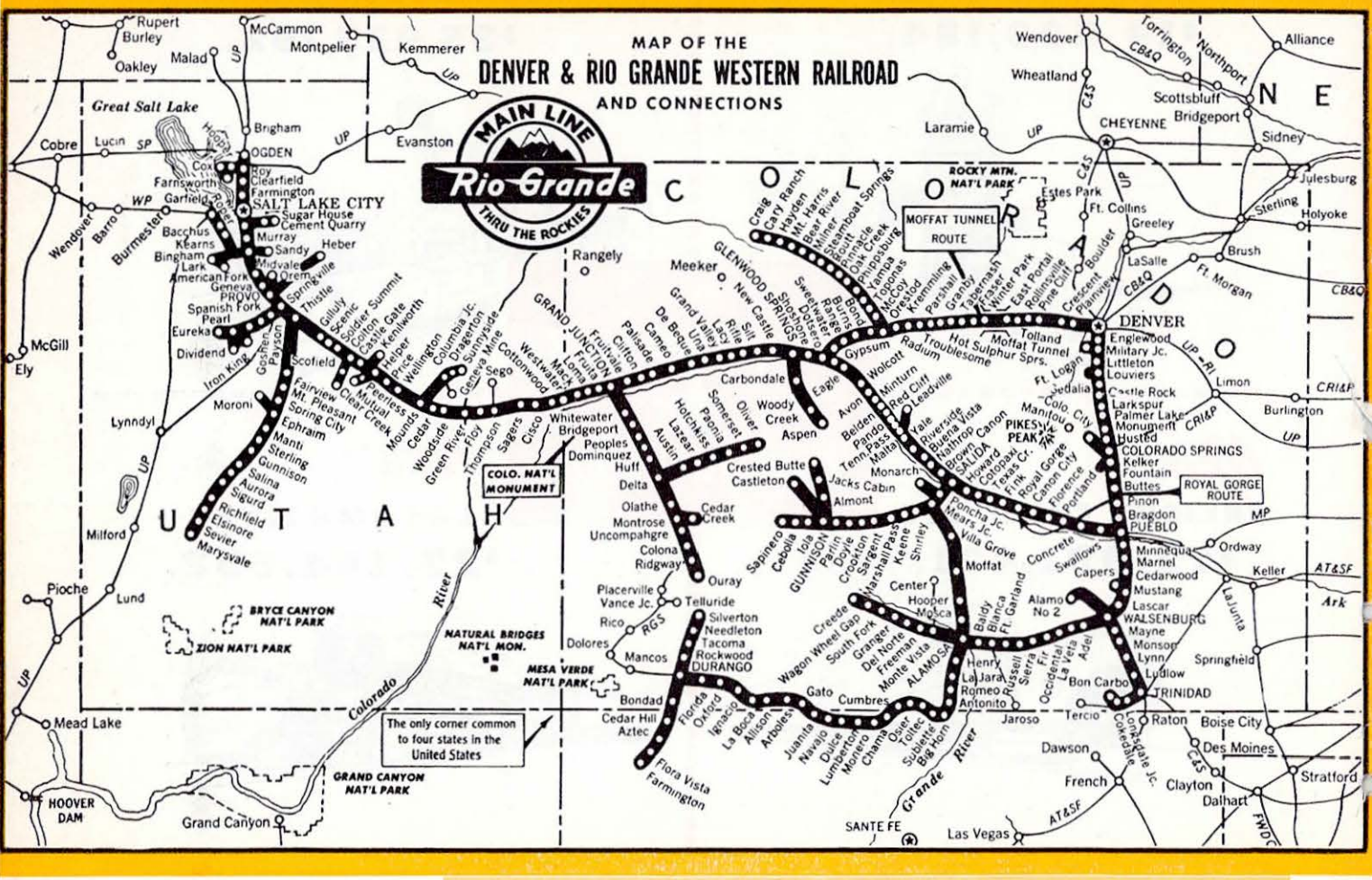
Never have we been better able to meet the needs of our customers. And this constant improving shall continue. As it does, you will have more and more reasons for *depending* on B & O service. *Ask our man.*

LINKING 13 GREAT STATES B&O WITH THE NATION

Baltimore & Ohio Railroad

Constantly *doing things* — better!

Rio Grande



The Rio Grande, vital link in the transcontinental railroad chain, maintains traffic offices in key cities from coast to coast.

Vast natural resources, ample power and water, equable climate, stable labor market — industrial opportunity is unlimited in Colorado and Utah, where the progressive, friendly Rio Grande provides dependable transportation. Your business inquiry will be handled promptly and in full confidence by E. L. Beardsley, Director of Industrial Development, Rio Grande Railroad, 1531 Stout Street, Denver, Colorado.

MAIN LINE
Rio Grande
THRU THE ROCKIES

Denver & Rio Grande Western Railroad
F. C. Hogue, Vice-President - Traffic
Rio Grande Bldg., 1531 Stout St.,
Denver, Colo.

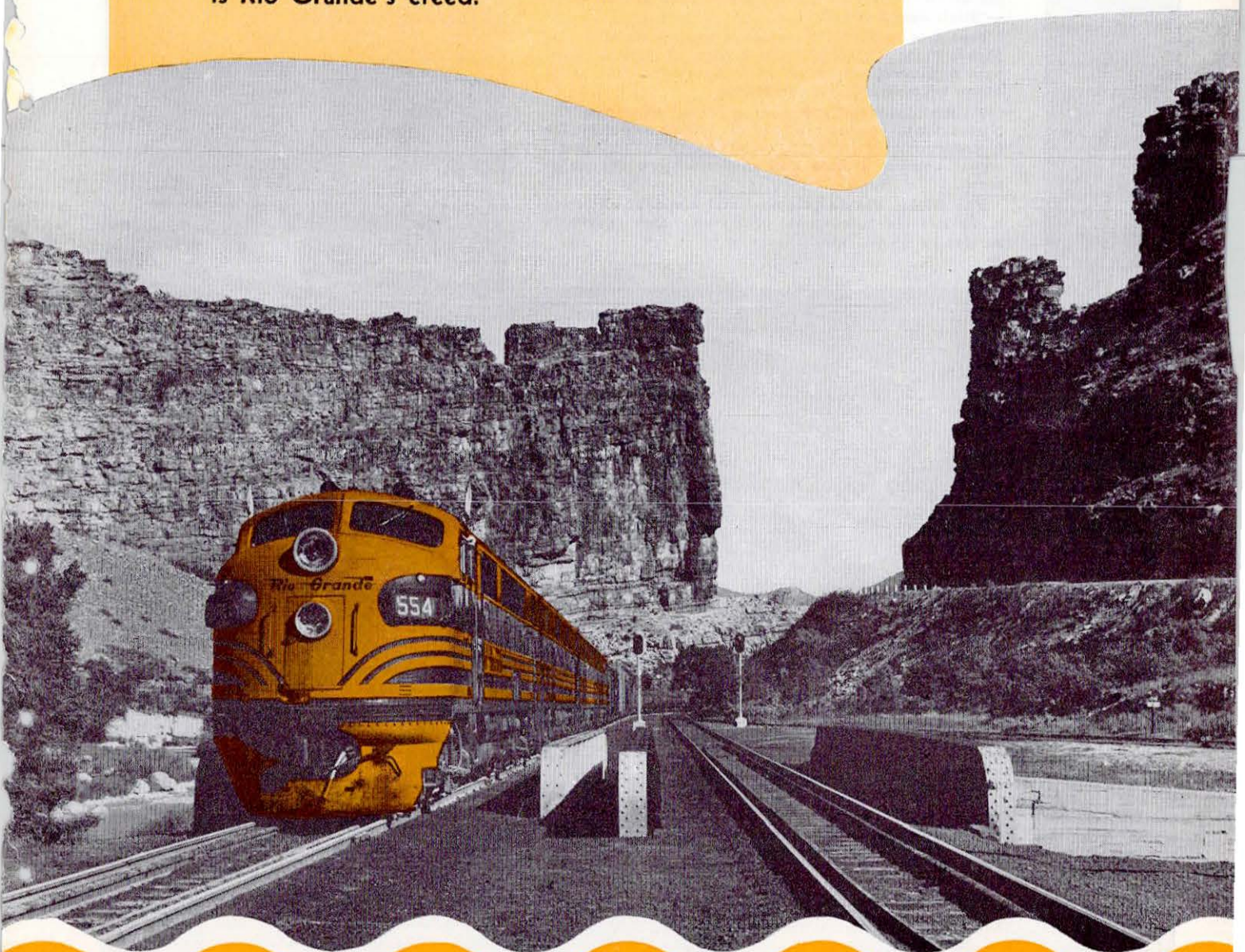
THE DIRECT CENTRAL

DEPENDABLE TRANSPORTATION

ALERT, MODERN RAILROADING

keynotes Rio Grande Service . . . the physical plant is kept at peak efficiency thru prompt utilization of methods, materials and designs discovered by ceaseless Rio Grande research . . . modern power and equipment operate over a heavy-duty, high-speed steel highway protected all the way by CTC and ABS.

Reliable, friendly, efficient service to shippers is Rio Grande's creed.



TRANSCONTINENTAL ROUTE

NICKEL PLATE ROAD

Terminal Tower, Cleveland 1, Ohio

LIVING UP TO A LEGEND

Day in and day out, Nickel Plate freight trains serve the industrial and agricultural heart of America, living up to the legend painted across their red cabooses —"High Speed Service."

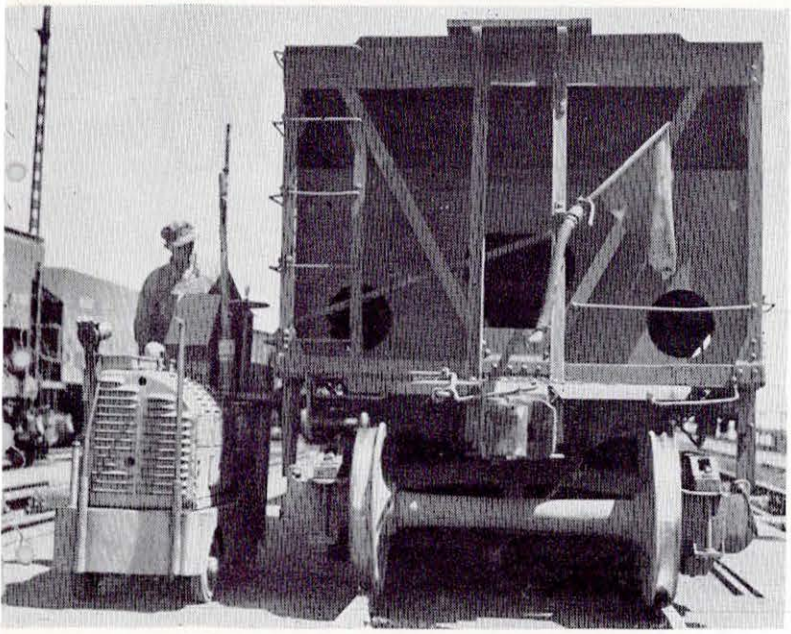
Fast and dependable service is traditional with the Nickel Plate. It stems from a sense of duty to shippers and receivers, pride in achievement and maximum efficiency of its equipment.

To maintain and increase operating efficiency, the Nickel Plate spends millions of dollars annually for improvement of its road, extension of its automatic signal control system and modernization of equipment.

The Nickel Plate's principal and constant objective is to provide intelligent, progressive and courteous service to its patrons.

More Ore for more steel

Out of the great brown open pits of the Mesabi Range and the deep shaft mines of the Vermilion Range the Duluth, Missabe and Iron Range Railway each year hauls the enormous tonnages of iron ore which constitutes its principal freight traffic.



Specialized Traffic Requires Special Equipment

Special facilities are employed by the Missabe Road to accomplish this job of ore handling, starting with the huge 140,000-lb. tractive effort Mallet-type locomotives which pull the long trains of ore from the mines, continuing with the weighing of the cars enroute on the precision-built automatic scales designed especially for the type of car used in this service, on through the intricate car-sorting process by means of which ores of different grades are placed in groups or blocks for delivery into assigned pockets at the docks, and then the dumping of the cars into the dock pockets, which requires mechanical wrenches operated by portable untrapping machines to open hopper doors. The final step in the delivery of ore into the vessel is the lowering of the long chutes into the hold of the boats and controlling the flow of ore so as to spread the cargo evenly for safe transportation down the lakes.

"operation safety"

Honored by the National Safety Council for mantaining the lowest employee accident rate among all Class I railroads during the past 25 years, the Duluth, Missabe & Lron Range continues to work toward the goal of a perfect safety record in the future.

Its safety department is given equal importance with all major departments of the D. M. & I. R., and conducts a continuous program of supervision and education among employees, encouraging their suggestions and adopting all that are practicable.

And by making perfect safety the objective, an important side result is achieved in better, more efficient operation all along the line.

SAFETY FIRST
DULUTH MISSABE AND IRON RANGE

The Road of the Rolling Ore

DULUTH, MISSABE & IRON RANGE RAILWAY

Southern Pacific orders $218,000,000 in post-war rolling stock

Determined to give the west and southwest freight and passenger service second to none, S. P. has ordered for post-war delivery over $218,000,000 worth of new equipment. Eighty-five percent of this amount will be spent on freight cars and locomotives.

SHIP: Southern Pacific

The West's Greatest Transportation System

Serving CALIFORNIA • OREGON • NEVADA • ARIZONA
UTAH • NEW MEXICO • TEXAS • LOUISIANA

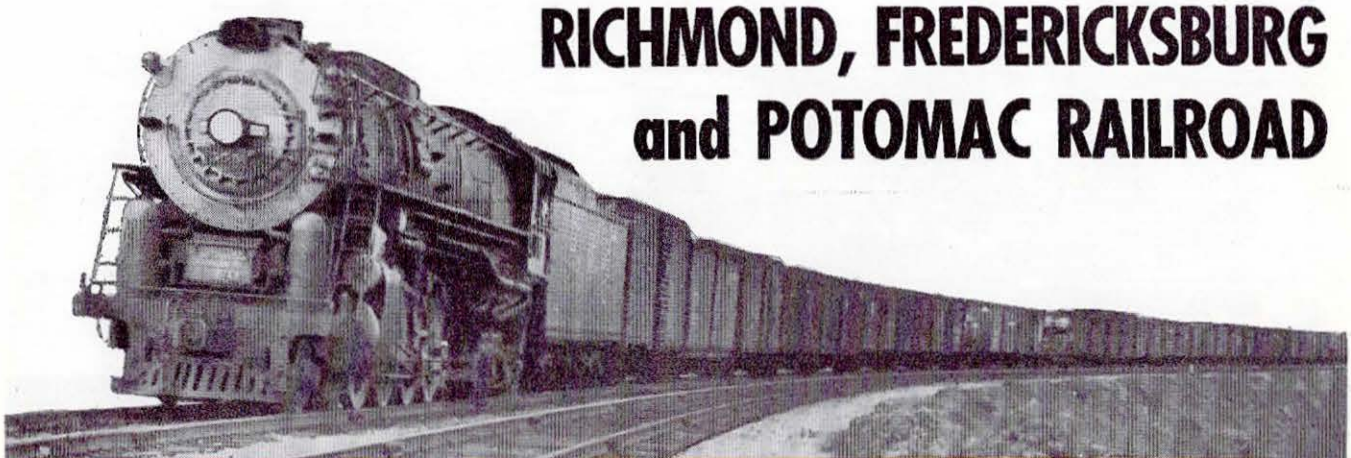
NO BOTTLENECK HERE

in AMERICA'S BUSIEST "TWO-WAY FUNNEL"

Up or down the coast there is a constant flow of shipments on quick exacting schedules over the busy double track route of the R. F. & P. between Richmond and Potomac Yard. Traffic on this stretch is among the heaviest to be found on any American railroad. It calls for that high order of railroading efficiency for which the Richmond, Fredericksburg and Potomac is justly noted. Track, yard facilities, signals, equipment, and motive power are modern and maintained at top notch effectiveness.

The smooth "on time" movement of such a volume of traffic makes it accessible to all parts of the country . . . and proves the desirability as a plant location of the region local to the R. F. & P. Every economic advantage, including dependable transportation, suggests that here is a good spot for your new plant. May we tell you more?

RICHMOND, FREDERICKSBURG and POTOMAC RAILROAD

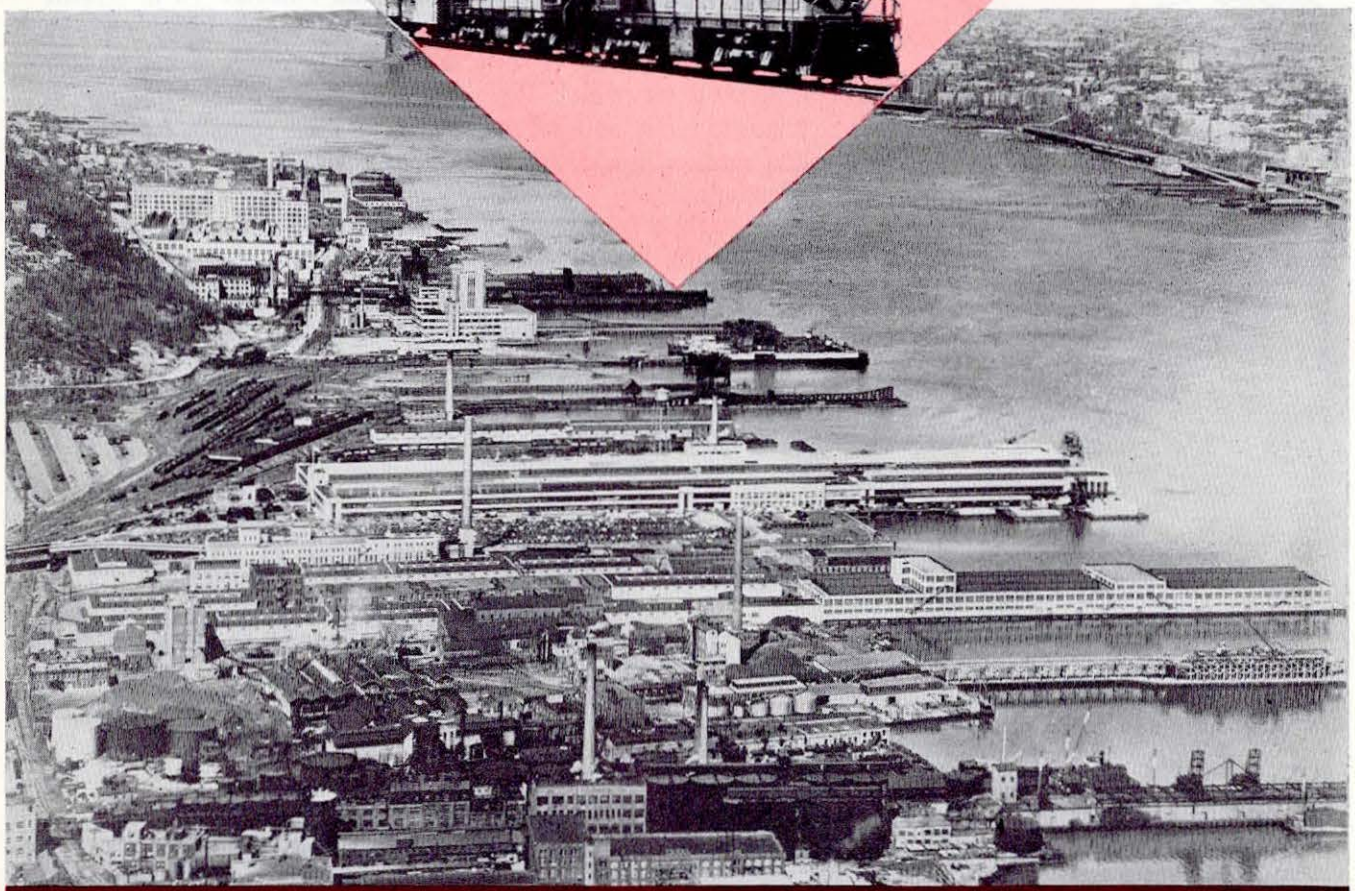


W. M. TAYLOR, *TRAFFIC MANAGER*, RICHMOND 20, VA.

The SUSQUEHANNA Starts at EDGEWATER

HERE, adjacent to the country's largest market and in close proximity to shipping lines the Susquehanna provides the lifeline of many world wide manufacturers. Excellent transfer service and connections to every railroad in the country, handled by our all-Dieselized trains, assure prompt delivery.

The Susquehanna has room for more industries and some choice factory sites are available. Your inquiries will receive immediate attention.



NEW YORK, SUSQUEHANNA AND WESTERN RAILROAD

HENRY K. NORTON, TRUSTEE

How shippers enjoy a broadcast without hearing it!

Conductor to Engineer: All black! (*no hot boxes*)

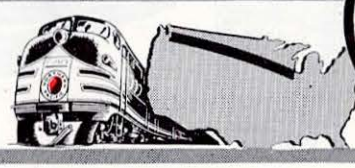
If you ship freight, you'll like Northern Pacific's exciting new "radio program"—even though you can't hear it! We're talking about "broadcasts" between the locomotive and caboose of N. P. freight trains in the Cascade Mountains . . . via new two-way VHF radio telephone equipment. Why there? Because up in that lofty land of heavy weather, we can greatly expedite movement of your freight by keeping all crewmen constantly in touch with each other . . . even though they may be a mile apart. Keep tuned for further details . . .

Engineer to Conductor: O.K., we're highballing!

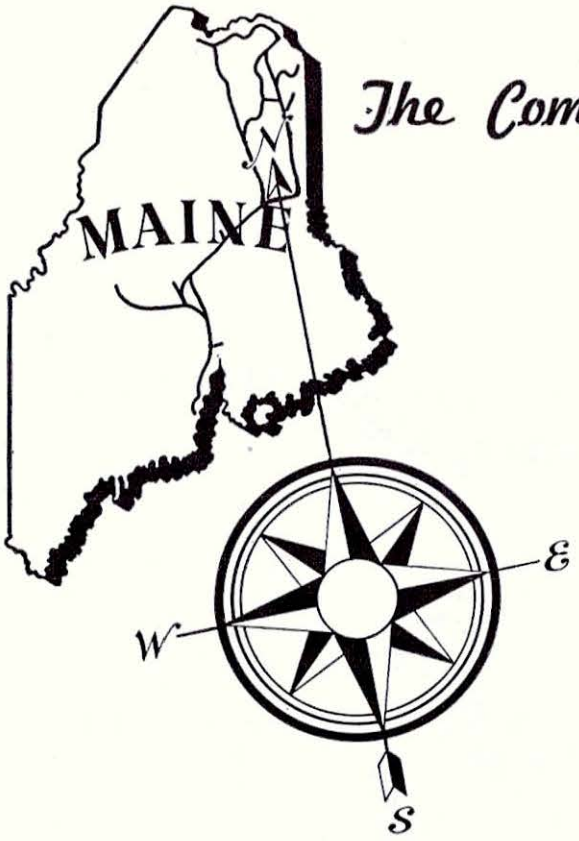
Our new "end to end" radio communication also means *safer* handling of your freight. In case of trouble—a hot box or sticking brakes—the engineer is told *instantly*. Northern Pacific is taking many other important steps to give you better shipping along the Main Street of the Northwest. We're buying new diesel power, building new freight cars, improving our right-of-way, and streamlining our loading-and-unloading procedures. Call on us next time you have a really *tough* shipping problem!

NORTHERN PACIFIC RAILWAY

Main Street of the Northwest



NORTHERN PACIFIC
YELLOWSTONE PARK LINE



The Compass Always Points NORTH

Delicately dancing on its precise pivot, the compass always points north.

For those seeking opportunity for the location and development of industrial enterprise, the compass may be prophetic in the State of Maine.

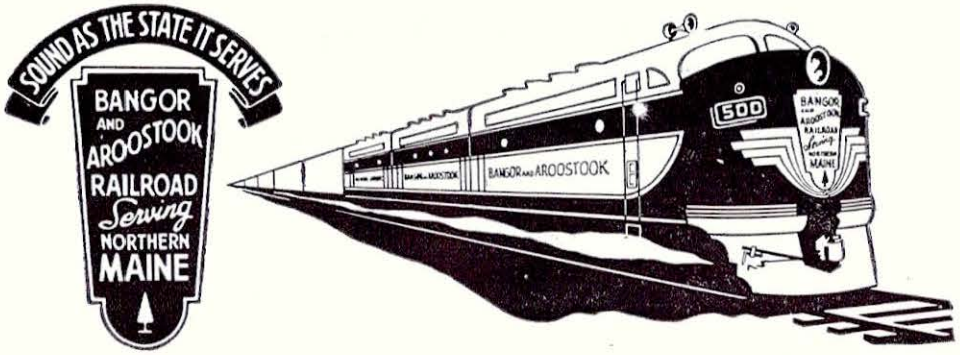
Northern Maine's vast area provides unlimited opportunities. In addition to an extensive variety of raw materials, Northern Maine has a healthful climate, plenty of room to grow, cooperative local and state governments, sensible real estate values, sound banking facilities and an adequate reliable railroad transportation system.

No One Ever Went Wrong Following A Compass

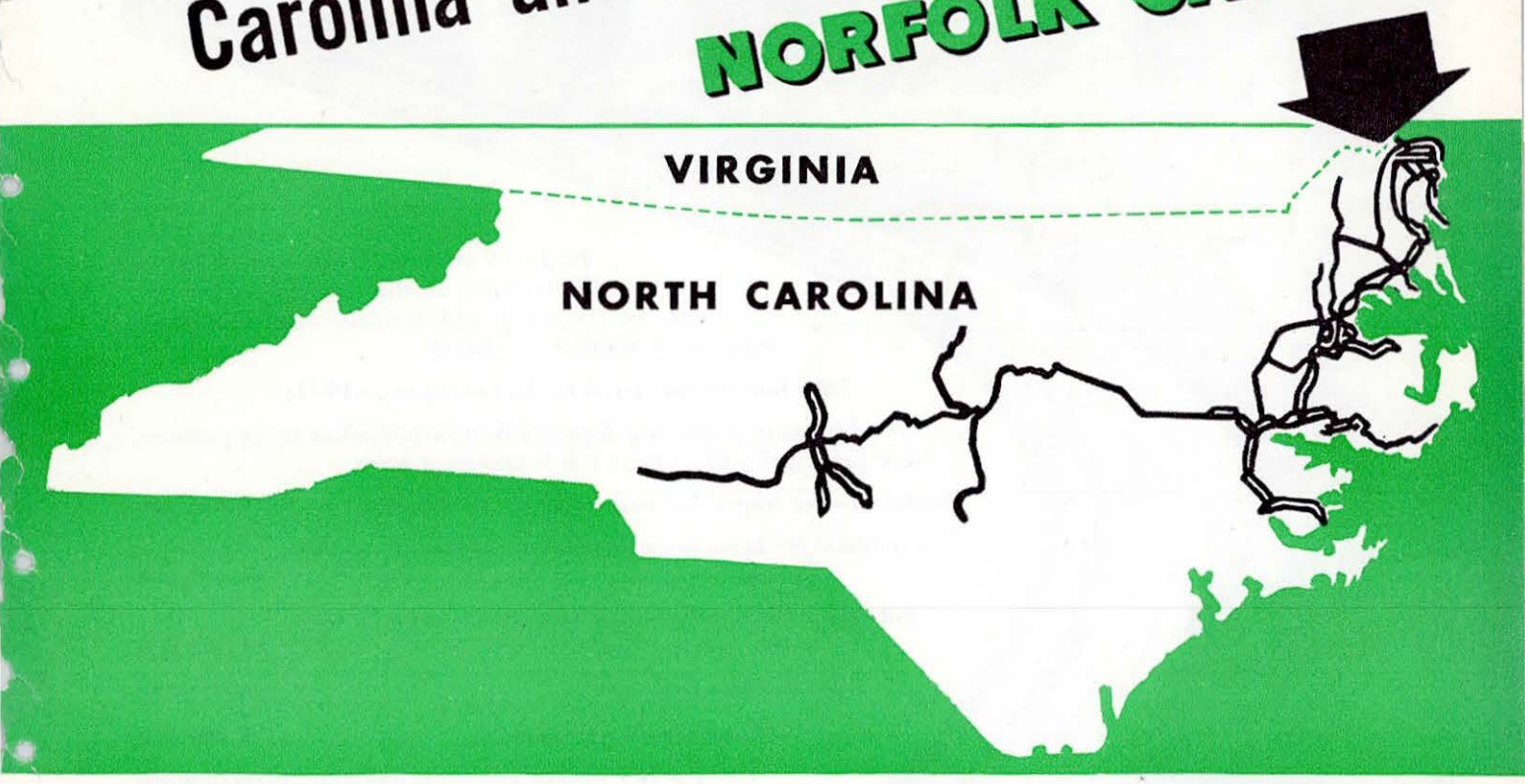
There's ample room and a site just "made to order" for that new plant somewhere in Northern Maine.

BANGOR AND AROOSTOOK RAILROAD

General Offices BANGOR, MAINE



Serving progressive North Carolina and Virginia through the NORFOLK GATEWAY



NORFOLK Southern Railway is proud to serve two such truly progressive Southern states as North Carolina and Virginia, embodying the attributes of sound government, fair system of taxation, excellent rail systems, ample paved highways, abundant low-cost power from numerous hydro-electric plants, and plenty of native labor—a combination which offers wonderful opportunities for commercial and industrial activities, and a real welcome extended to new enterprises.

North Carolina and Virginia are generously endowed with natural resources, including extensive timber lands, shale and clay for ceramic operations of all kinds, sand, stone, gravel and coal deposits.

The territory is also rich in resources of agriculture and wonderful opportunities exist for further development of products of the soil.

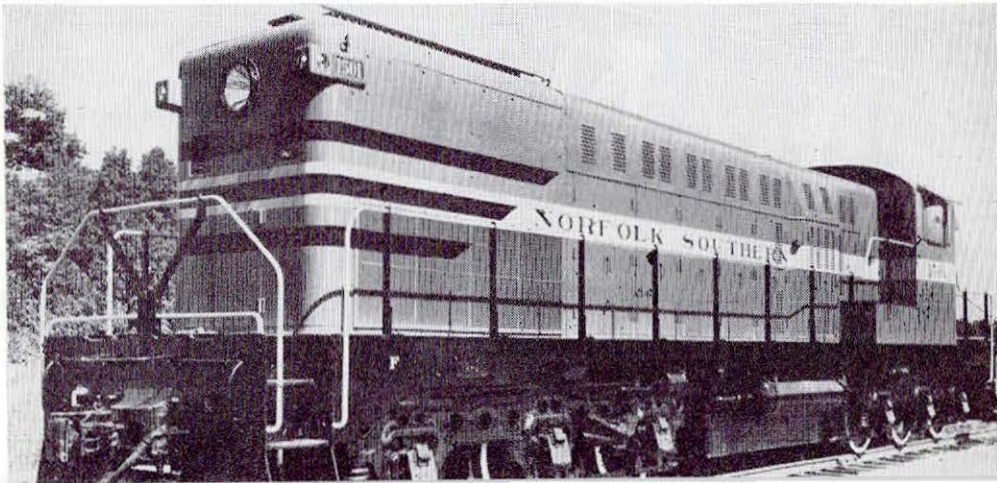
In addition, along the route of the Norfolk Southern are found numerous rivers, affording unlimited water supply for manufacturing purposes of all kinds. In fact, many ideal sites are available for chemical, textile, paper, pulp and diversified industrial activities.

The Norfolk Southern offers access to this bountiful area and, through the excellent facilities of the ports of North Carolina and Hampton Roads, affords ample opportunity for world trade.

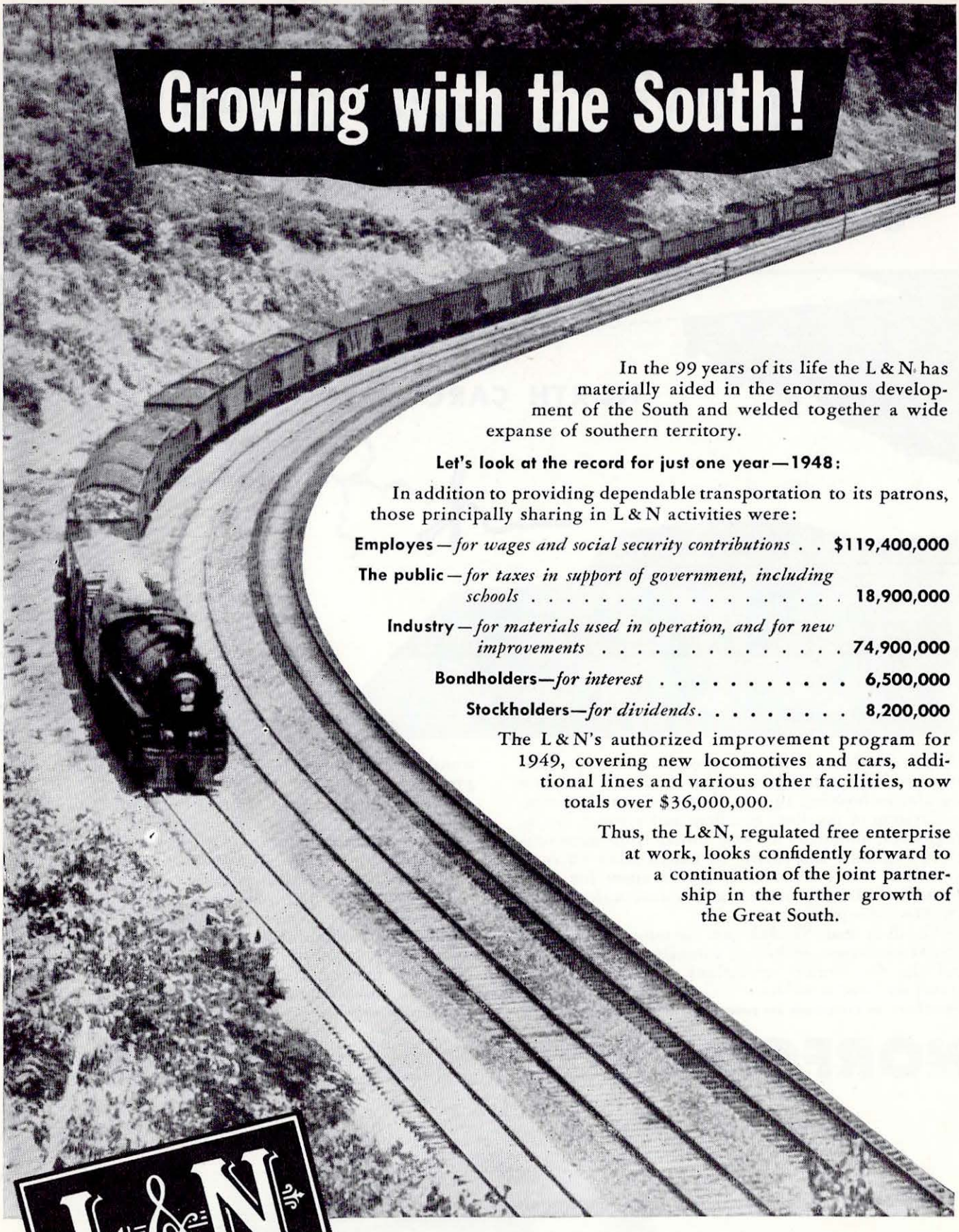
Let our Industrial and Agricultural Department submit a private and confidential survey concerning your expansion program.

NORFOLK SOUTHERN RAILWAY

NORFOLK, VA.



Typical of newer motive power on the Norfolk Southern, this 1500 horsepower diesel-electric locomotive is representative of the improvement program that is bringing top flight service to shippers and receivers.



Growing with the South!

In the 99 years of its life the L & N has materially aided in the enormous development of the South and welded together a wide expanse of southern territory.

Let's look at the record for just one year—1948:

In addition to providing dependable transportation to its patrons, those principally sharing in L & N activities were:

Employes—*for wages and social security contributions* . .	**$119,400,000**
The public—*for taxes in support of government, including schools*	**18,900,000**
Industry—*for materials used in operation, and for new improvements*	**74,900,000**
Bondholders—*for interest*	**6,500,000**
Stockholders—*for dividends*.	**8,200,000**

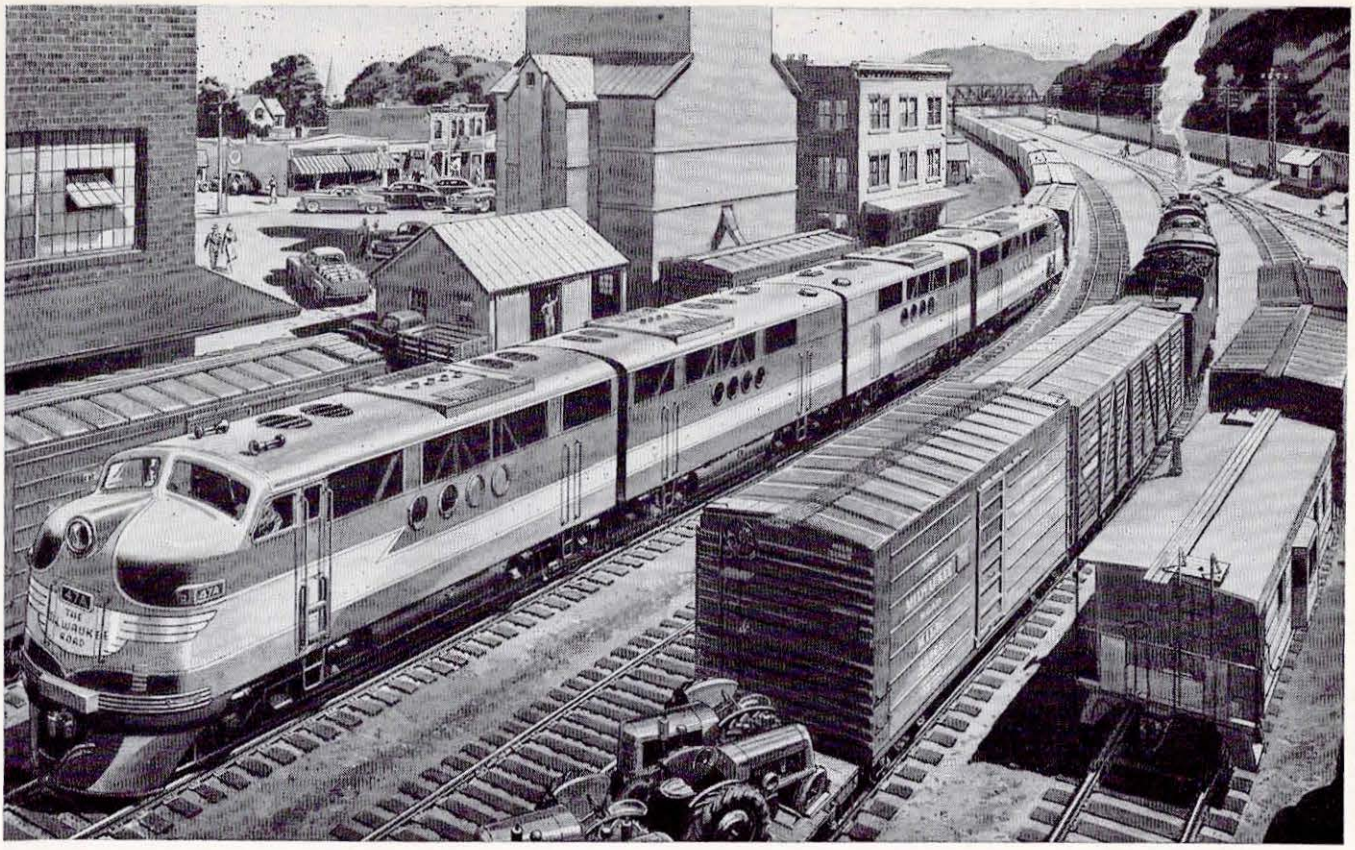
The L & N's authorized improvement program for 1949, covering new locomotives and cars, additional lines and various other facilities, now totals over $36,000,000.

Thus, the L&N, regulated free enterprise at work, looks confidently forward to a continuation of the joint partnership in the further growth of the Great South.

L&N

LOUISVILLE & NASHVILLE RAILROAD

THE OLD RELIABLE . . . YESTERDAY . . . TODAY . . . TOMORROW



Millions for betterment mean FREIGHT PROGRESS

The Milwaukee Road's long-term program of improvement is being pushed steadily ahead. Funds aggregating millions of dollars annually are being spent on the betterment of roadbeds, physical property, buildings and existing equipment as well as for new equipment.

Freight equipment purchased and delivered during 1948 included 6-1000 horsepower diesel-electric switching locomotives and 1000-50 ton hopper cars.

Constructed at the company's own shops and placed in service during the year were 2781-40′ 6″ 50-ton box cars, 2800-41′ 6″ 50-ton gondola cars and 300-52′ 6″ skeleton log flat cars.

New rail, track relocations, yard and passing track extensions, bridges, grade separations, added automatic block signal and communication systems, new fuel and water stations, shops and warehouses all swelled the total of 1948 accomplishments.

The Milwaukee Road is pledged to a continuing program aimed directly at the faster, safer and more efficient movement of freight in all classifications. To achieve these objectives it has the loyal support of more than 35,000 employes whose alertness, skill and experience have long helped make this railroad a leader in freight transportation.

J. O. McILYAR
Western Traffic Manager, Seattle, Wash.
H. S. ZANE
Freight Traffic Manager, Chicago, Ill.
P. H. DRAVER
General Freight Traffic Manager, Chicago, Ill.

CHICAGO MILWAUKEE ST. PAUL AND PACIFIC

THE MILWAUKEE ROAD

Foremost in Freight Service

C & I M

These rails make direct connections with 14 trunk lines serving 38 states 24 hours a day.

That's why P. & P. U. interchange service gives shippers outstanding advantages in avoiding the increasing congestion of metropolitan terminal areas.

Over 68 years' experience has perfected P. & P. U. expertness at speedy operations and wide-awake care for every detail of rail freight handling.

New Diesel switching locomotives, new electric switches centrally controlled are in use, new service features are constantly being added, to give every shipment through the Peoria Gateway via P. & P. U. quick transfer in safe condition.

One of the four P. & P. U. classification yards.

LOOK! NEW . . .

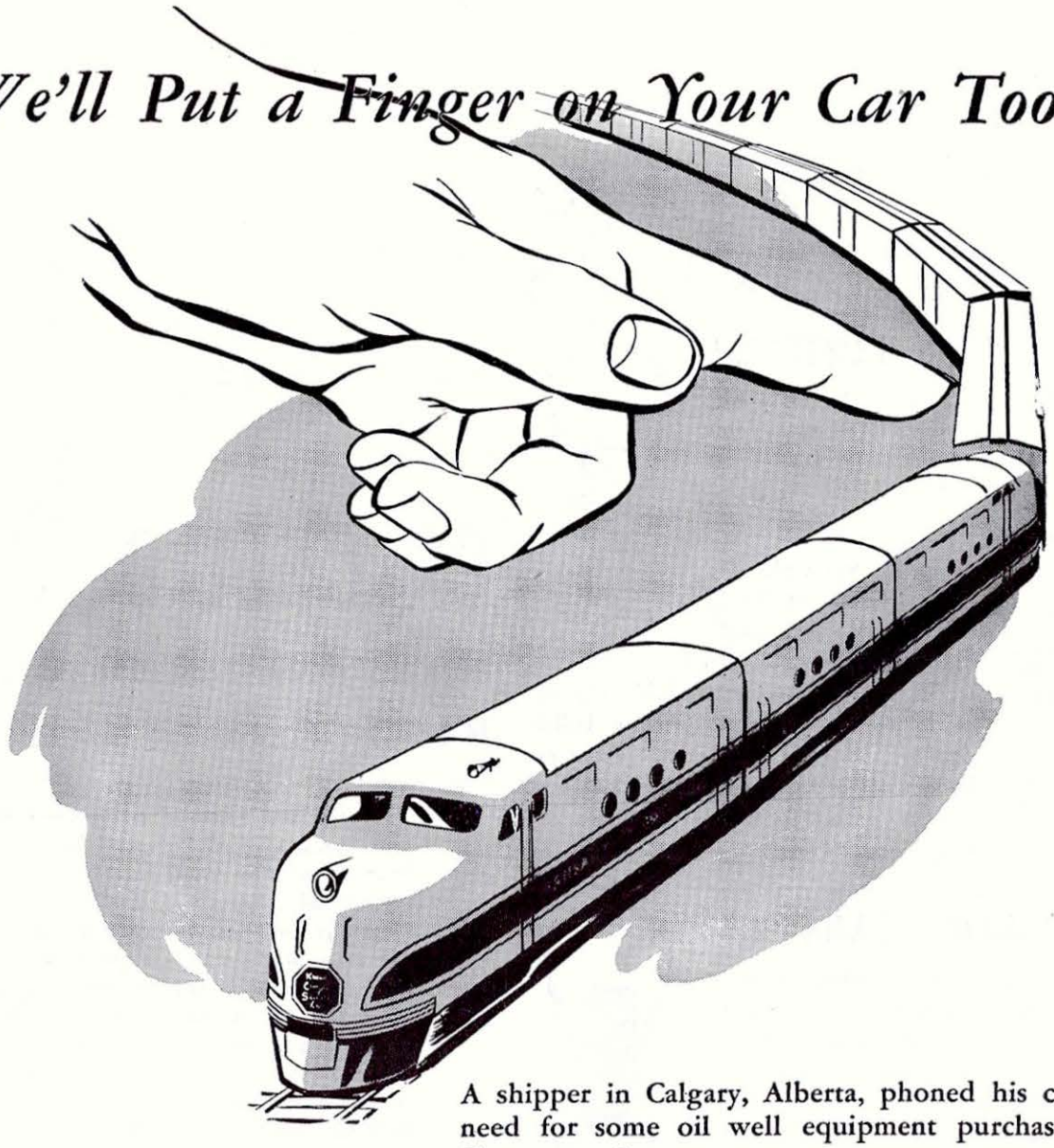
Sites for industrial locations along P. & P. U. tracks furnish a wide choice of rail facilities in all directions. The 14 trunk lines directly serving 38 states and indirectly all 48, put the P. & P. U. tracks which connect with them in a favorable position of access to the ports, resources, and markets of the nation.

Since P. & P. U. switching charges are absorbed by the road-haul carriers, plants located on the P. & P. U. tracks have a 14-fold shipping advantage at the Peoria crossroads, with the added benefits of dependable fuel, power, and water supplies, moderate taxes, and prosperous adjacent communities. Look here, and ask us for complete details.

PEORIA and PEKIN UNION RAILWAY COMPANY

E. F. STOCK, General Traffic Manager, ROOM 36, UNION STATION, PEORIA 2, ILLINOIS

We'll Put a Finger on Your Car Too!

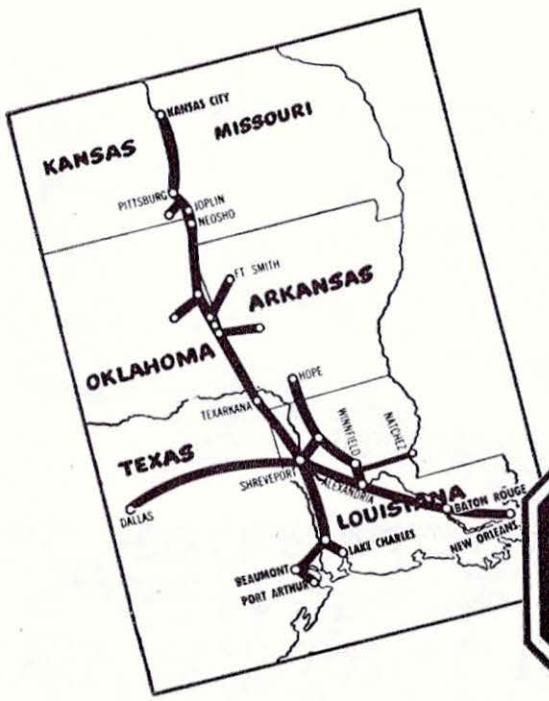


A shipper in Calgary, Alberta, phoned his critical need for some oil well equipment purchased at Shreveport, La.

Our traffic and transportation departments located the car being loaded, had it rolling in no time, and delivered it pronto next day to a connecting line at Kansas City.

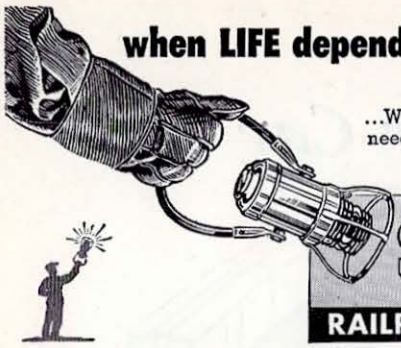
We "kept our finger" on the car and the shipper gave us a "big hand"... and more business...when it arrived in time for its purpose.

Nothing unusual... but it emphasizes the fact that we put more than a locomotive on a car whenever a shipment is urgently needed.



Our fast diesels are getting the freight over the road as never before... but when you're really in a spot for a car of freight, just tell our nearest traffic representative and he will "put his finger" on it for you!

KANSAS CITY SOUTHERN *Lines*



when LIFE depends on a LIGHT...

...WHEREVER lanterns are needed, you're safer by far with dependable

STAR

RAILROAD LANTERNS

TRAINMEN'S LANTERNS

Popular twin-bulb type. Lowest initial cost, freedom from failures, makes this economical model the most popular among Railroad men.

MODEL 202

MODEL 210

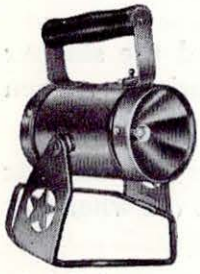
Modern Trainmen's and Yardmen's lantern: 3-bulb principle (no switch)—50% greater safety — precision made. Globe gives unmistakable signals at longer range, also protects bulbs against accidental breakage. Spot from bottom similar to spot on Model 202, for number grabbing. (Shield available to keep signal light out of eyes).

FLAGMAN'S LANTERN

Precision designed for safety service. THREE BULBS available for instant use. Exceeds AAR specifications. Interchangeable globes: red, yellow, green, blue—one lantern now does four signaling jobs. Globe may be quickly changed without tools.

MODEL 204

CAR INSPECTOR'S LANTERNS



MODEL 180

Star Inspector Lanterns are extra-durable, yet light in weight! Throw bright, smooth light without dark spots due to specially designed diffusing lens. Choice of 3 models: 180 (illustrated); 178, fixed base; 179, over arm type.

(STAR lanterns take standard lantern batteries and bulbs.)

Write for descriptive folder:

STAR HEADLIGHT & LANTERN CO.

Guiding The World's Railroads Since 1889

MANUFACTURERS OF LOCOMOTIVE HEADLIGHTS, GENERATORS, RAILROAD LAMPS AND LANTERNS

89 ALLEN STREET, ROCHESTER 6, N. Y.

Chicago, New York, New Orleans, Philadelphia, St. Paul, St. Louis, Omaha, San Francisco, Seattle

YOU CAN REDUCE MAINTENANCE COSTS...

with

EX-CELL-O

HARDENED AND GROUND PINS AND BUSHINGS—

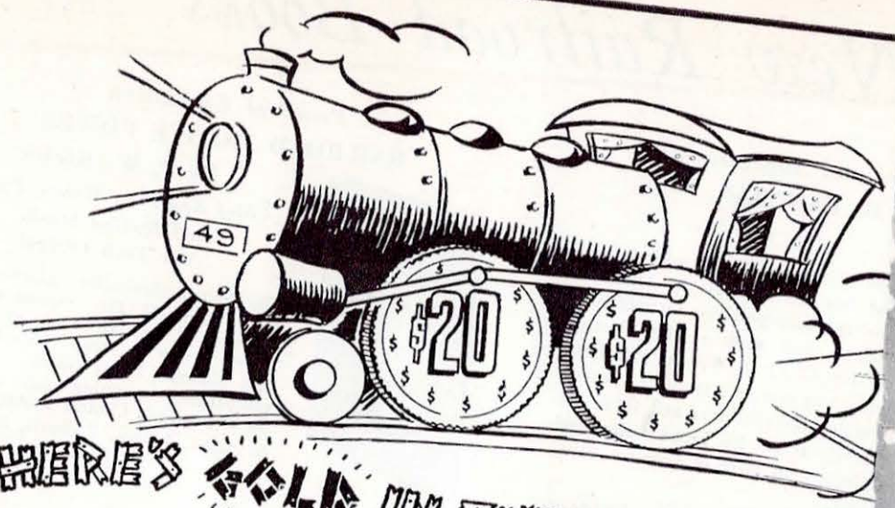
Railroad and railroad equipment builders who use Ex-Cell-O Pins and Bushings have found that they wear longer and improve service of other parts. Ex-Cell-O Pins and Bushings are case-hardened to uniform depth, so that wear is slow, and is distributed evenly over all surfaces. By absorbing road shock and vibration, they cut down wear on costly foundation parts. Standard styles and sizes for steam and Diesel equipment are given in Ex-Cell-O Bulletin 32381. Write for a copy today.

49-15

Railroad Division

EX-CELL-O CORPORATION

DETROIT 32, MICHIGAN



THERE'S GOLD IN THEM THAR W

Use Wheel Truing Brake Shoes to **mine a rich lode** of extra
worn or flat wheels. Abrasive brake shoes have meant **pay dirt** for r
over fifty years. **Stake your claim** to reduced maintenance and se
Write for further details—today.

Established 1898

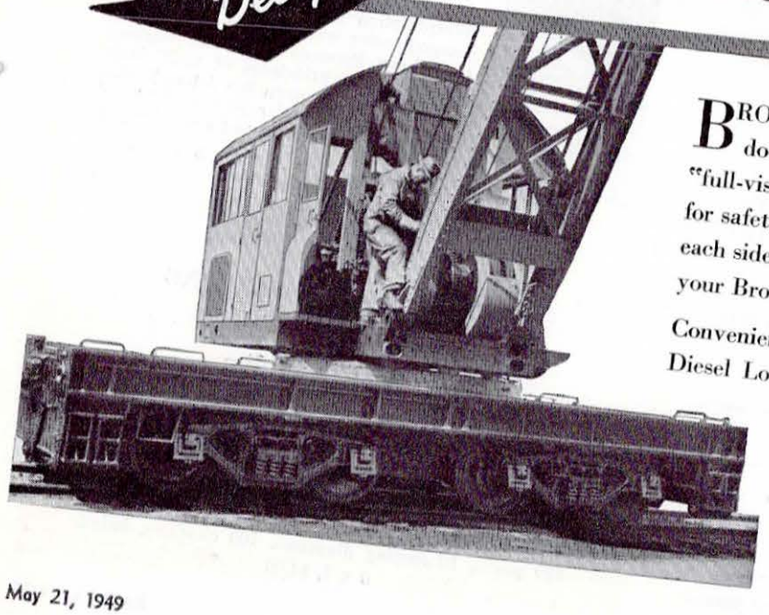
SERVING THE RAILROADS OF THE NATION FOR FIFTY Y

WHEEL TRUING BRAKE SHOE C

628 W. BALTIMORE, DETROIT 2, MICHIGAN

AN EXAMPLE OF BROWNING *Proven Design*

GET IN AND OUT OF YOUR CRA WITHOUT CLIMBING D

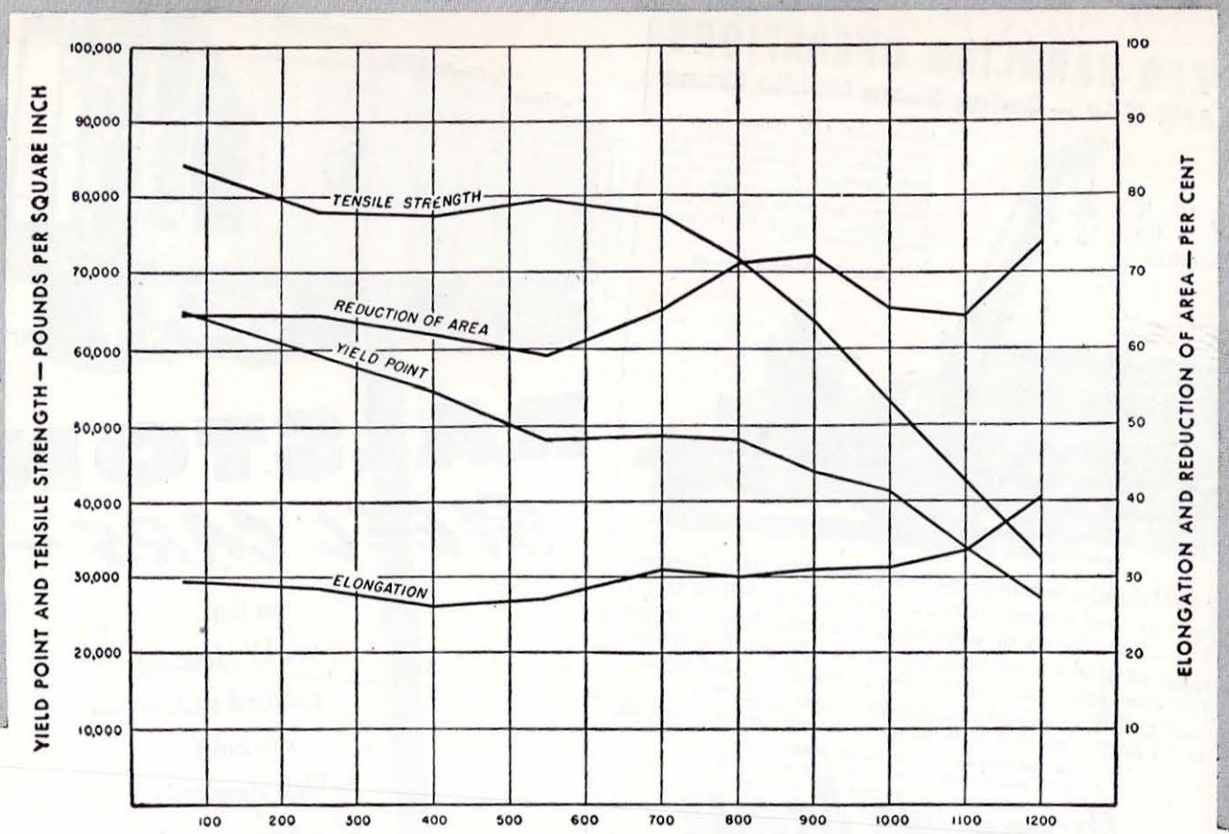


BROWNING Diesel Locomotive
doors. Plexiglass windows in thes
"full-vision" cabs. For easy access t
for safety, there are two full-vision do
each side and a full sliding door in back
your Browning without climbing down

Convenience, safety and comfort are fou
Diesel Locomotive Cranes, Heavy Du
Rubber Mounted Wagon
Cranes and Shovels. Every
Browning is developed fro
Write for literature.

THE BROWNING CRANE
16227 Waterloo Road • C

May 21, 1949



Short Time Tensile Properties of Manganese-Vanadium Plate Steel at Elevated Temperatures.

(Average of 9 Heats)

High temperature properties of Manganese-Vanadium Steel Plate

IN PLATE STEEL for boiler construction, ability to maintain ductility throughout the temperature range customarily experienced in high pressure boilers is a notable achievement.

The above chart indicates that Manganese-Vanadium plate steel meets this requirement to a superlative degree. Representing closely-agreeing results obtained on 9 commercial heats of this type of steel, made to ASTM Spec. A 225-46, it displays in striking manner the excellent ductility in that temperature range ordinarily referred to as "blue brittle."

The hazardous embrittlement which occurs when firebox plate of ordinary steels is heated through this temperature range is of great concern to both designing engineers and operators of locomotive boilers. The satisfactory service record of Manganese-Vanadium steel plate in a number of locomotive boiler applications, under a wide variety of operating conditions, is a practical demonstration that its mechanical properties are adequate for successful locomotive boiler operation at elevated temperatures.

Our metallurgical engineers have had considerable experience in this field, and will be glad to help you obtain the maximum benefit from the use of Manganese-Vanadium steel.

MAKERS OF FERRO ALLOYS — VANCORAM BRAND — CHEMICALS AND METALS

VANADIUM CORPORATION OF AMERICA

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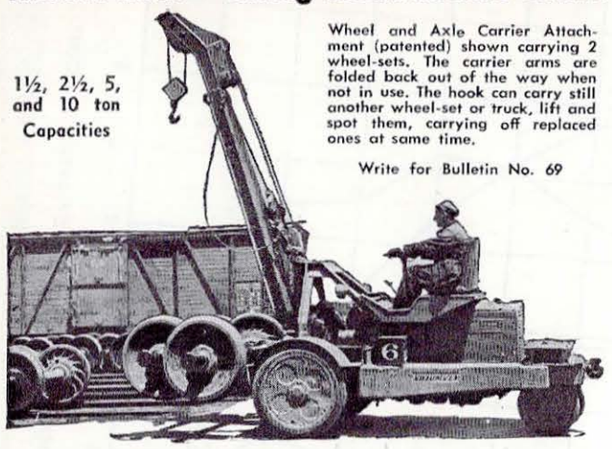

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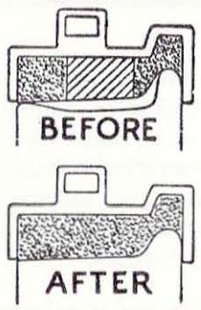

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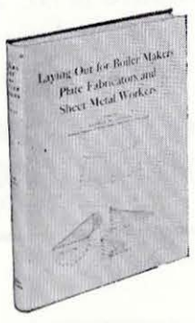

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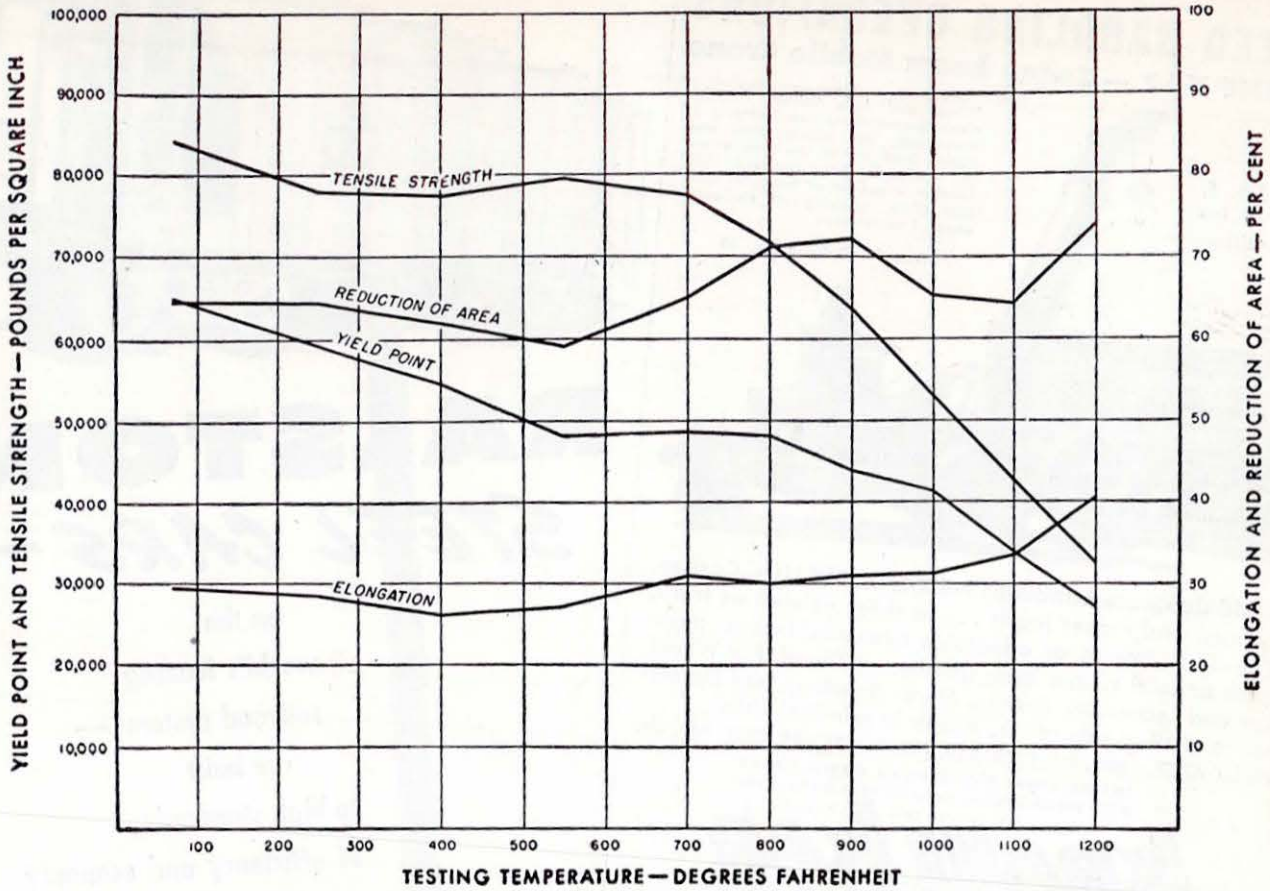

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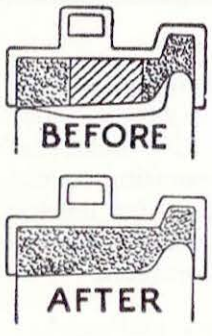

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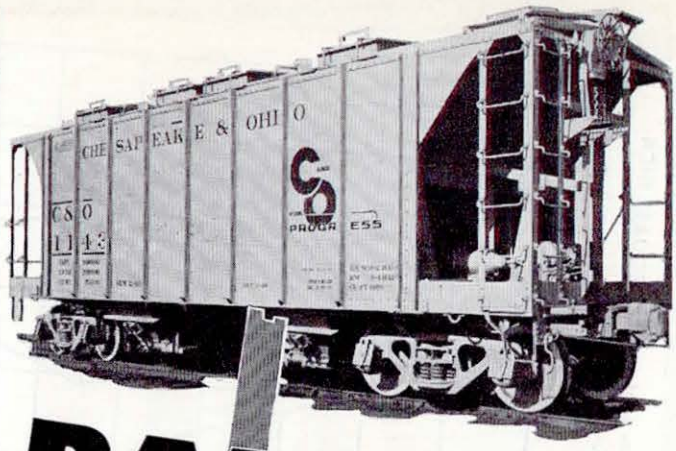

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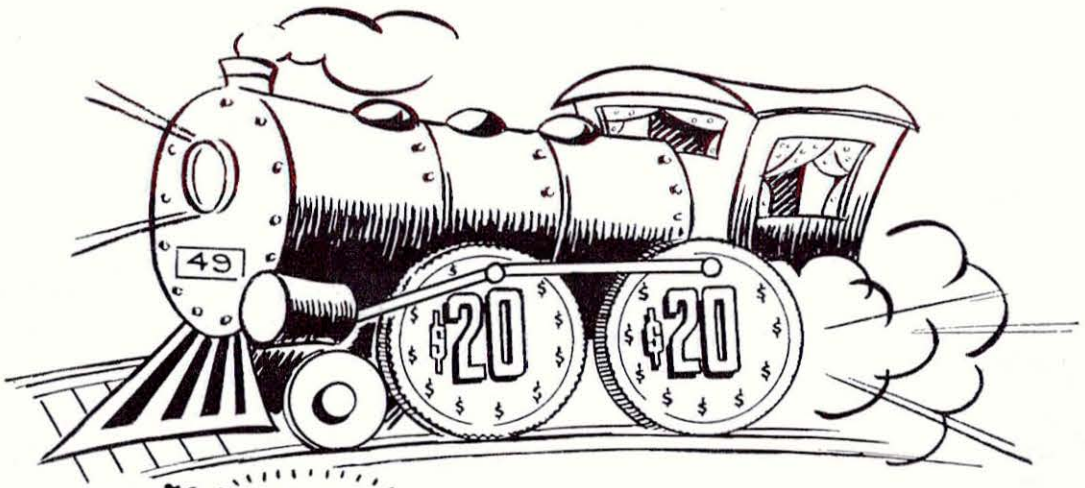

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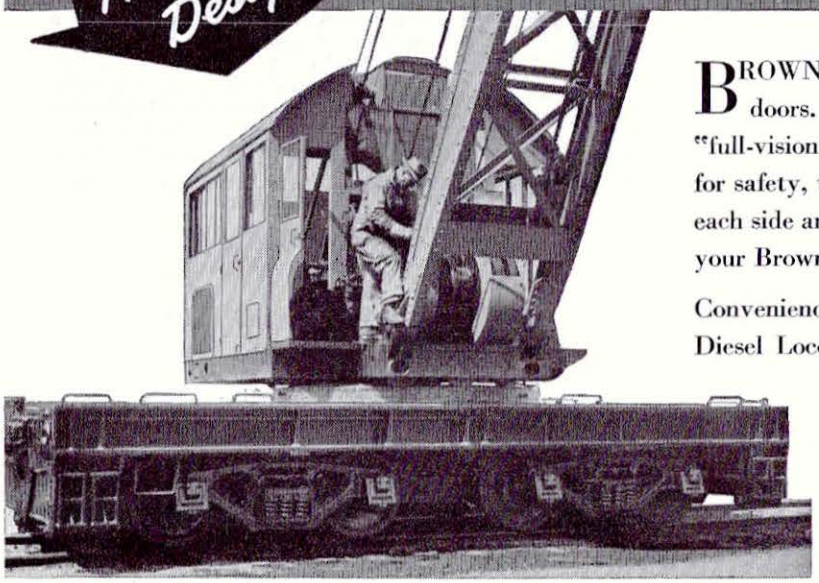

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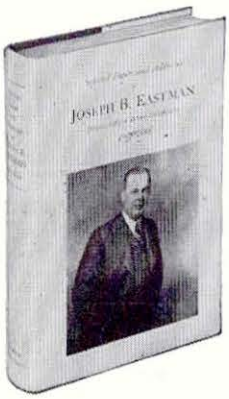

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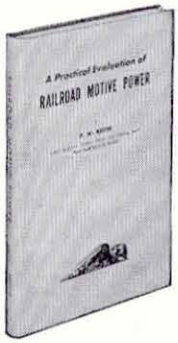

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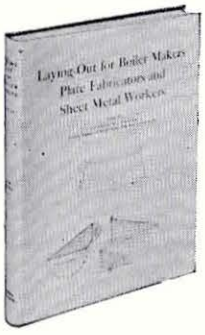

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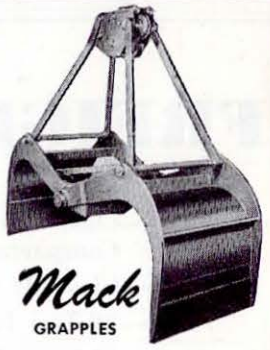

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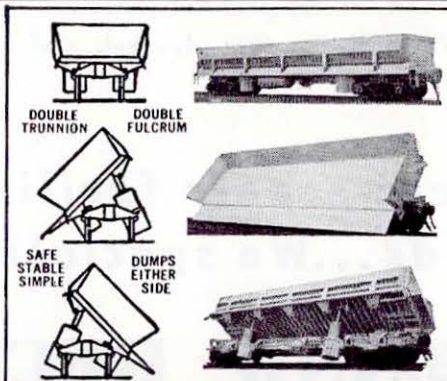

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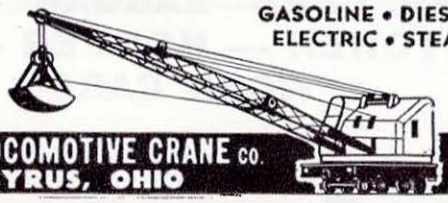
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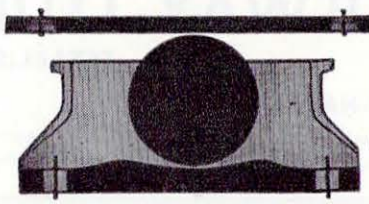
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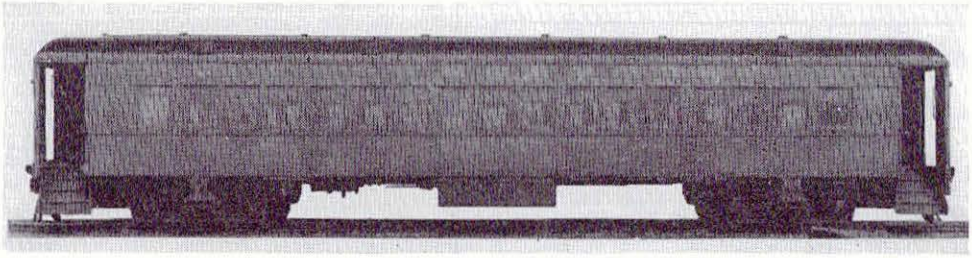

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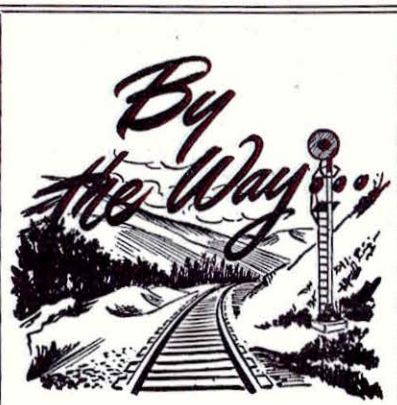

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Yes, with the question of transportation *quantity* now in the background, this year's Number places its main emphasis on improving the *quality* of today's railway freight service—a subject of paramount importance to shippers, railways and government, alike.

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The success of these Numbers lies in the interest and response that they have always aroused among all factors in the railway freight picture. That's why we sincerely invite your opinion and comments on the effectiveness of this 1949 Freight Progress Number. For our readers' criticisms provide the guideposts which will help us ascertain how well it has served its purpose.

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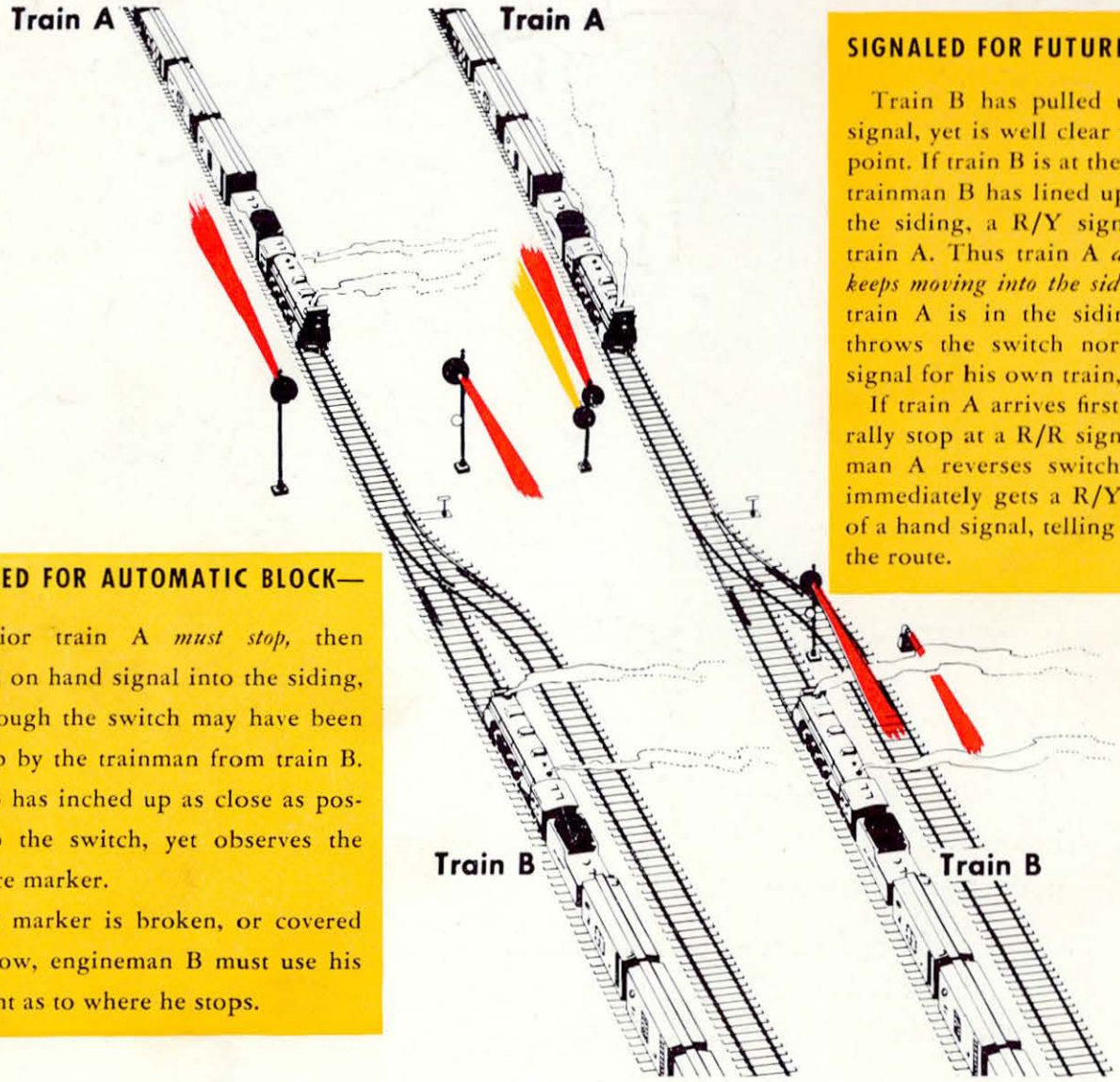

SIGNALED FOR AUTOMATIC BLOCK—

Superior train A *must stop,* then proceed on hand signal into the siding, even though the switch may have been lined up by the trainman from train B. Train B has inched up as close as possible to the switch, yet observes the clearance marker.

If the marker is broken, or covered with snow, engineman B must use his judgment as to where he stops.

SIGNALED FOR FUTURE cTc—

Train B has pulled up close to signal, yet is well clear of the clearance point. If train B is at the switch first and trainman B has lined up the switch for the siding, a R/Y signal is given for train A. Thus train A *does not stop, but keeps moving into the siding.* As soon as train A is in the siding, trainman B throws the switch normal, clears the signal for his own train, and they're off.

If train A arrives first, it would naturally stop at a R/R signal. When trainman A reverses switch, engineman A immediately gets a R/Y signal, instead of a hand signal, telling him that he has the route.

These sketches show only one advantage of this signal arrangement. If train B had entered the siding instead of taking the main as shown, train A could still keep moving. Train A, keeping to the main, would run past a Y/R signal to the next signal (not shown) protecting train B. Again, an unnecessary stop would be eliminated.

Besides the economy you realize on any future conversion to cTc, this system gives you immediate benefits by making non-stop main-line moves practicable, by accurately defining clearance points, by protecting train taking siding until it is completely in the clear, and by placing signals where they give train crews the most information.

Get full information on the benefits your road can gain from this modern signaling arrangement. Plan now to talk it over with your G-R-S representative.

GENERAL RAILWAY SIGNAL COMPANY

New York 17 Chicago 3 ROCHESTER 2, N.Y. St. Louis 1

A-2356